User's Guide

Version 3.1

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Belgium – June 2007.

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1. Introduction

Welcome to the world of **MobileSTAR**, your Geographic Information System (GIS) for mobile solutions.

Making sure, on one hand, that your GIS data is exact is essential for appropriate decision-making. But on the other hand, cutting down cost and time for these updates is today one of your top priorities.

MobileSTAR is a professional GIS with an intuitive and easy-to-use interface. No need for a specific training to know how to use the software and to fulfil your mission.

Numerous and different fields of application:

- Field surveying
- Forest management and survey
- Town planning analysis
- Inspection of sewage network
- Incidents notification
- Inventory of traffic signs
- Mining exploration
- Archival of geological data
- Soil quality analysis
- Management control of rivers and currents
- Crop management
- Defence applications
- Public lighting maintenance
- Pipeline management
- ….

It goes without saying that **MobileSTAR** is like any other STAR-APIC software when it comes to connecting with **STAR GIS, Carto Winstar** and **STAR NeXt**.

STAR GIS, the office GIS of the STAR product line, is used to prepare and export your data on your OFFLINE mode mobile. Then, STAR GIS takes care of synchronizing your data with the central server.

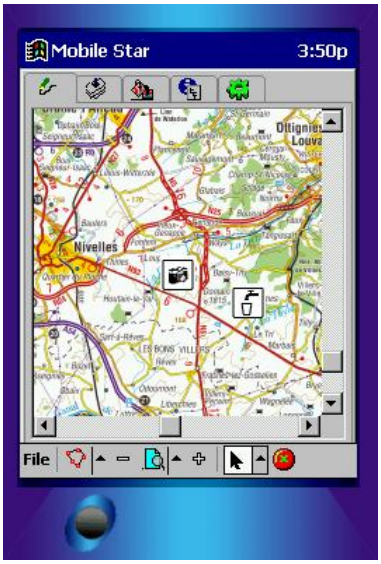
STAR NeXt or any WMS1 compatible Web Mapping server is usable via a simple Web connection. This mode provides the user with the list of the layers proposed by a remote server as well as background images resulting from layers selected by the user and merged.

MobileSTAR is also open to other formats, via either native read/writing of standard formats (see annex 5.1) or **STAR XML**, a documented XML format accessible to all.

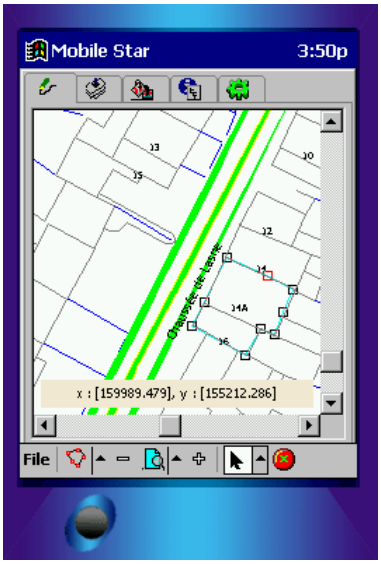
Here is – in short – what you can do with **MobileSTAR**:

- Read data exported from **STAR GIS** in STAR XML (SXL) or SHAPEFILE format.
- Use the pen or a GPS connection to locate and edit new objects.
- Display maps or plans in different vector and raster formats.
- Free navigation with the zoom functions in the main map window.
- Visualization of your current position in an overview with possibility of move.
- Location per graphic text, lists of alphanumeric attributes, etc.
- Generate SQL queries via a wizard or an SQL editor to create elaborated queries.
- Web connection to WMS 1 compatible Web Mapping server (see OpenGIS standard).
- Export all your data or only the layers modified on the ground in STAR XML or SHAPEFILE format.

Example of use on Windows CE compatible PDA

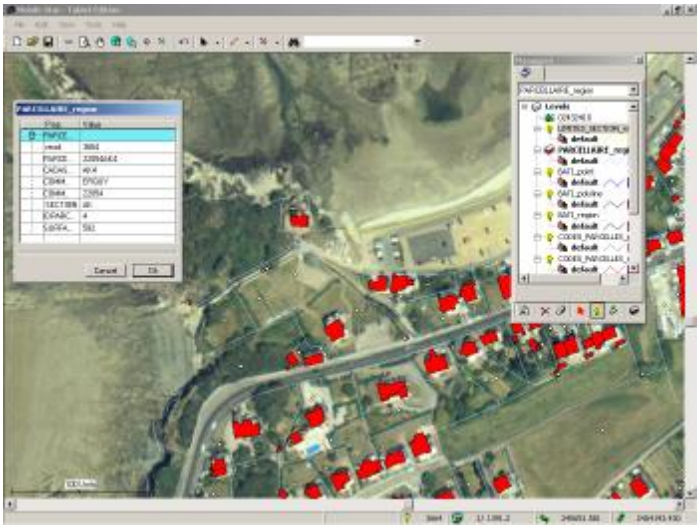


Raster data - seamless image layer
and TrueTypes symbols (.TTF files) used



Vector data - spatial database
and construction points used

Examples of use on PC Tablet or Windows NT4, 2000 or XP compatible laptop



Note:
Go to chapter 5.1 for all supported formats.

About this guide

Chapter 1: Introduction

Chapter 2: Detailed presentation of all functions and their interfaces

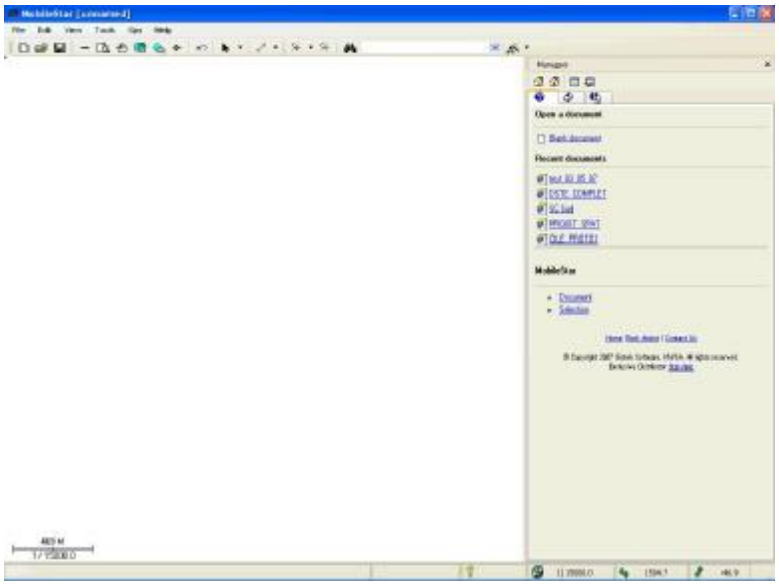
Chapter 3: How to prepare and export from **STAR GIS** your data and forms with the help of wizards…

Chapter 4: How to secure data synchronisation from **STAR GIS** to the STAR-APIC spatial server with the help of wizards…

Annexes: List of all formats supported by **MobileSTAR**. Search and detect problems

2. Functionality of MobileSTAR

2.1 Starting MobileSTAR



You can find in the «***Start*** » menu of your TabletPC or laptop a section called « ***MOBILESTAR*** ».

Aegis Properties Help	Properties of the Aegis files.
Mobilestar	Launches the **MobileSTAR** program.
MobileStar Tablet Help	The User's Guide in PDF format (Acrobat Reader) printable in A4 format.
MobileStar Tablet on the web	Link to the STAR-APIC's web site.
Sxl Help	Description of the STAR XML (SXL) format.

2.2 Primary graphic window

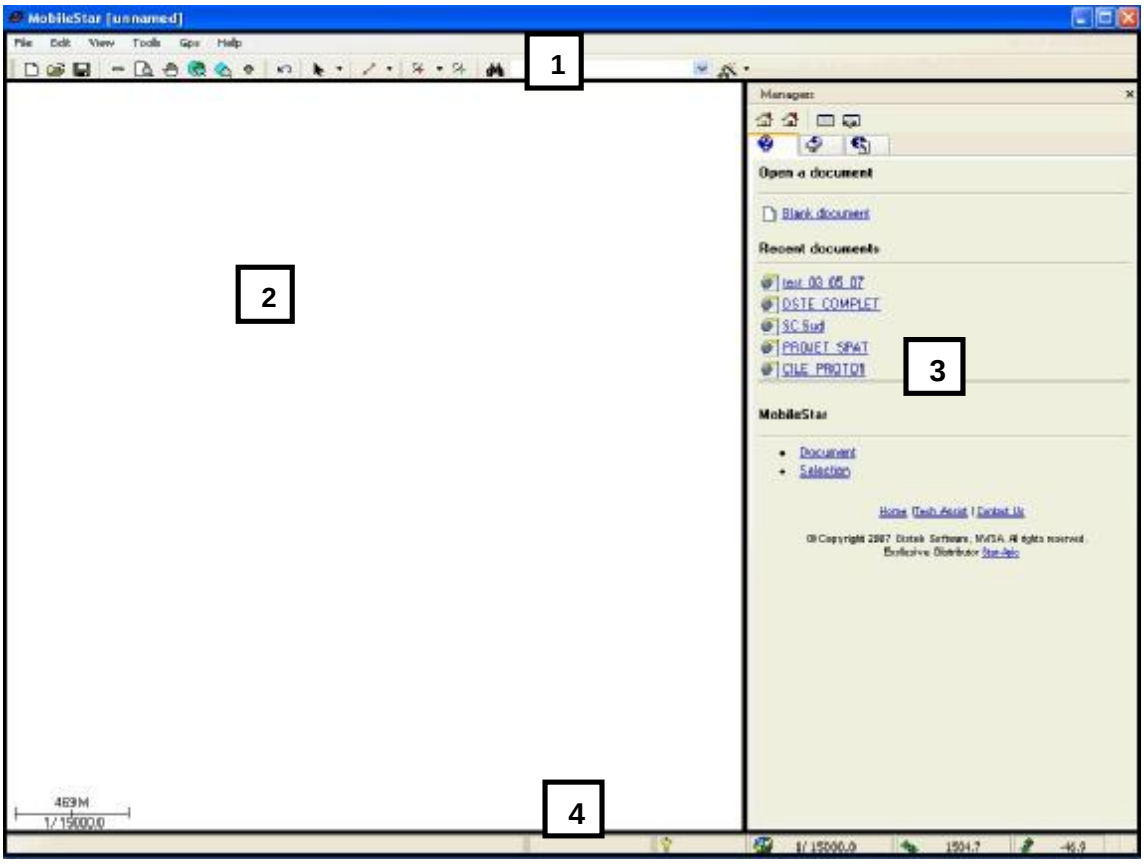
The interface has been analyzed and optimized to meet the constraints of mobile solutions. That is:

- Maximize the map window,
- Cut down the number of clicks in an operation,
- Keep the work context of every single functional block.

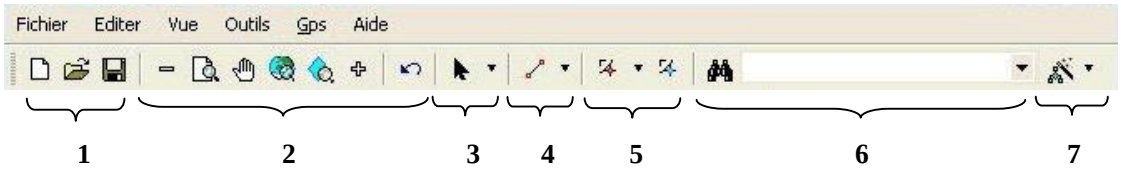
The general interface appears as different windows accessible via tabs. These enable you to easily and rapidly navigate among all functional blocks. Each tab has its own toolbar and its own pull-down pop-up menus.

The interface is made of several sections:

1. The menus and toolbars that interact with the primary map window,
2. The primary map window,
3. The Layer and Table Manager,
4. The status bar (shows X/Y co-ordinates and scale).



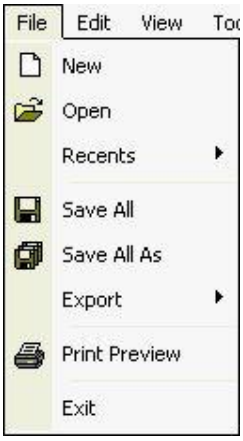
The toolbars:



1. General toolbar: New file, Open file, Save file
2. Navigation toolbar
3. Selection toolbar
4. Creation toolbar
5. GPS toolbar
6. Search toolbar (locate by text or alphanumeric attributes)
7. Pop-up menu of active command

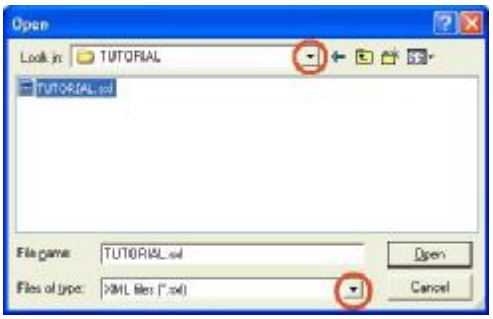
2.2.1 The menus

The File menu



New
New project **à** Already loaded data is closed.

Open
Open new vector or raster file.
(Selection of the file format under the window).



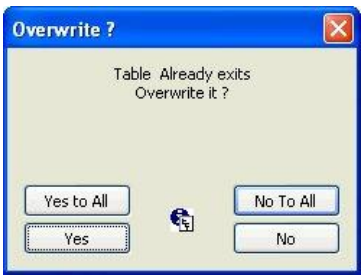
This command allows you to load:
- a file containing vector information; that is a STAR XML (SXL extension) or GIS file,
or
- a file containing "raster" information; that is an image alone or an image layer.

By default, the software filters the files with an **SXL** extension. Note that it is also possible to load:
- standard file formats such as SHAPE FILE (ESRI©), DGN (Microstation©), DXF or XML.
- image formats such as JPG, PNG, TIFF, GIF, CX, BMP,…

Note:
- The STAR XML file is an XML file documented via an XML schema and a DTD (see ***Sxl Help*** accessible in the «***Start***» menu). Thus, this format is open and can be generated from any GIS system.

- If an image does not contain any world file, it is not georeferenced and therefore, is displayed in co-ordinates X=0 and Y=0.

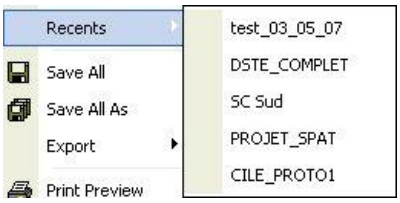
If your project (SXL or GIS file) contains alphanumeric information, the database is created when the file opens for the first time (in the same directory as the data file).



If the alphanumeric database already exists, a message may appear according to the status of the «Overwrite» variable in the ***Preferences*** file (see Edit menu) and enables you to specify whether you want to **update** or not. Update can be global or specified for every single alphanumeric table.

Note:
The name and place of the alphanumeric database are defined in the SXL file (tag « <DB path=''DB_name.db''> »).
If the software does not find the alphanumeric database via its absolute path, it searches it at the place of the SXL file.

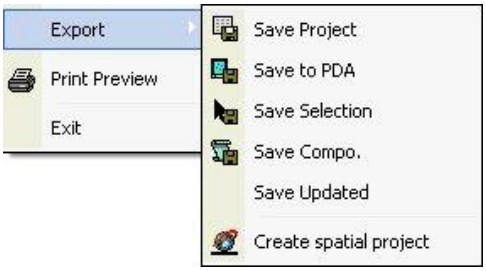
Recents
Display the list of the last files open.
SXL or GIS files only.
The other files and raster images are not part of this list.



Save All
Save all data:
- in **SXL** format if the format of open files is SXL.
  Note:
  Last SXL file open overwritten by the complete backup!
- in **GIS (binary format)** file, if at least one of the open files is in GIS format.
  Note:
  New GIS file created with the name of the last GIS file open. The previous GIS file is saved; the backup has the name of the file followed by the date and the time of the backup!

Save as
Save all data with another name or in another format (SXL or GIS).

Export -> Save Project
Save only the Theme Manager composition and the legends. The data is not saved in the SXL file but is referenced. This allows working with SHAPE FILE files as references and keeping an automatic update if these files are modified.



Export -> Save to PDA
Save a **STAR XML** file in two files: one with the background layers and the other with the modifiable layers.

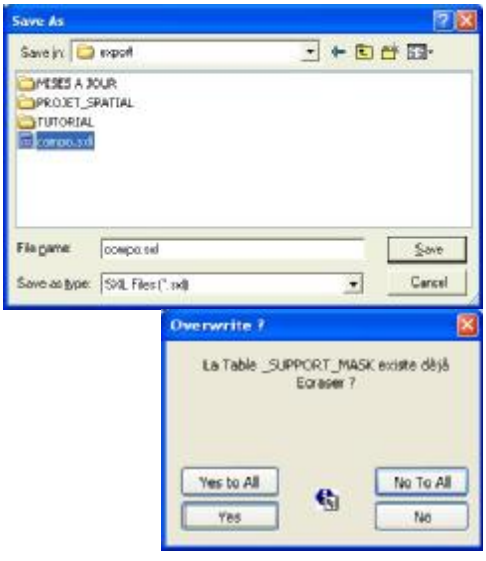
Export -> Save Selection
Save all selected data in STAR XML format (SXL).

Export -> Save Composition
Save a dressing composition (SXL file) which comprises:
- the legend,
- the order and the display scale of the layers,
- the status of the layers,
- the status of the category's fields,

…
This composition is usable for other SXL files.

To apply a composition to a **MobileSTAR** file, use the «Open» command in the File menu and choose the composition file (in SXL format).
All the parameters of this composition will apply to the loaded objects.

The software may ask you to confirm overwriting the tables' masks (or forms) if these were already created.



Note:

- If you have changed for a layer the structure of your alphanumeric tables (added or deleted fields) exported from STAR GIS, an old composition can not work any more as it still has the definition of the old screen form and may therefore contain more or less fields. In such a case, you will have to recreate a new composition in **MobileSTAR**.
- So, make sure that you don't forget anything in the preparation of a **MobileSTAR** project.

Export -> Save updated

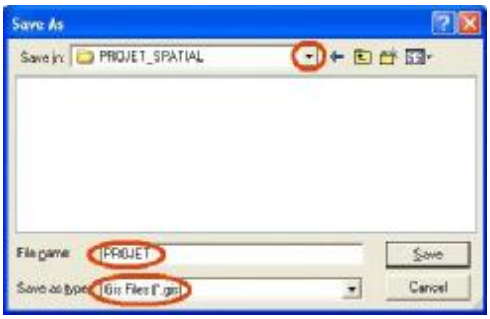
Save graphic and alphanumeric updates.

This command saves all updates (modify and create) done **on the modifiable layers of a spatial project**. Updates are saved in an SXL file.
Encode in the dialog an SXL file name and specify its save directory.

This SXL update file will be then imported to Star GIS so that updates will be added to the central database (see section 4.2).

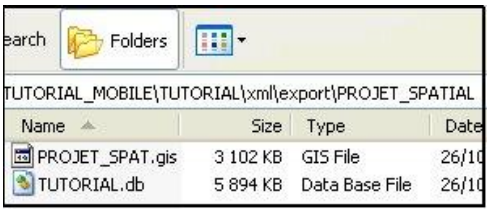
Export -> Create spatial project

Creation of spatial project.



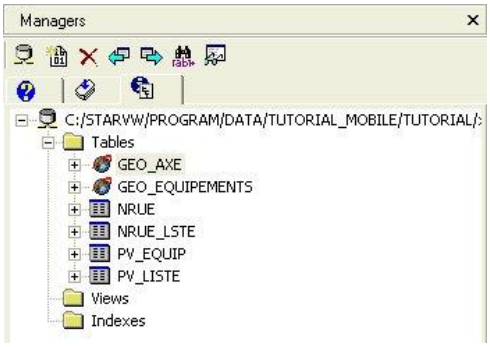
The «**Create spatial project**» command opens a dialog in which the spatial project must be given a name and a directory in which it will be stored. **The spatial project will be saved in an empty directory** to avoid mixing alphanumeric data.

When the user clicks «**Save**», the software creates the spatial project, downloads the initial SXL and loads the spatial project.
The background layers (= don't have the «***modifiable***» status) are exported to a GIS file while the «***modifiable***» layers are stored in a spatial SQLite database.



Note:
The name of the database is given in the initial SXL file (<DB path="TUTORIAL.db"/>).

To load an existing spatial project, use the «**Open**» command, choose the GIS format and open the GIS file of the spatial project. The spatial database will be automatically loaded.



The spatial tables have the layer's name followed by the « **GEO_** » prefix. They are differently symbolised in the Theme Manager's «Alphanumeric info» tab.
In the example here under, the «**GEO_AXE**» spatial table has the graphic data of the «**AXE**» layer and the alphanumeric data of the table linked to that layer (« **NRUE** »).

Print Preview

The graphic view is first previewed then before being printed.

Note:
The proposed title block is not modifiable yet, the title only is.

The Edit menu

Copy
This command allows you to ***copy*** the displayed map data to Windows clipboard. Then, you can copy/paste this map in any other office software such as MS WORD, EXCEL,… Note that it is not an image but an extract in vector format of Windows Meta File (WMF) type.

Select All
This function selects all vector data in the layers defined as selectable.

Select none
This function deletes the current object selection.

Properties
This function gives general information on the active document.

User
Definition of user name to secure data access

Password
Password to secure access to data.

Note:
This password can be encoded in Super User mode only, see ***Preferences*** here under.

Last Name, First Name, User, Initial, Mail, GSM, Tel
General information on the SXL file user.
This data is encoded during export to Star GIS (see «Export Star GIS **à** MobileSTAR»)

Lvl. Nb
Number of on-screen vector layers.

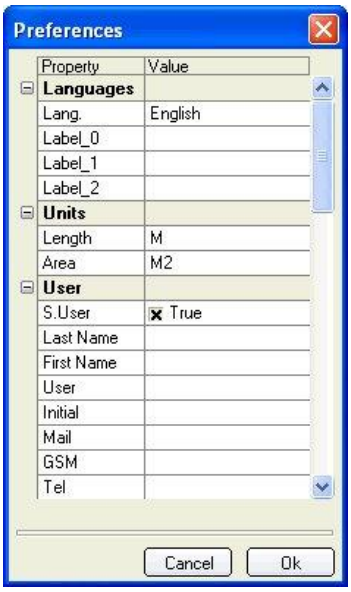
Envelop
Co-ordinates of the space taken up by the whole map.

Elements
Number of elements in the current map composition.

Add data protection
As explained here above, in Super User mode, you may add a «login» and a «password» to the project file and save it in a binary format such as GIS (with the «***Save as…*** » command in the File menu). This binary format allows you to skip the «login» or to delete the concerned TAG with a simple text editor.

Preferences

File that stores your default preferences when the application starts running.



Languages

Lang.

Selection of the software's interface language (default = English).
MobileSTAR is available in French, English, Dutch, Italian and Spanish.

Label_0, 1, 2

Defines which labels must be displayed according to the language of the interface.
Example: On the picture on the right, the figure «1» (label_1) is displayed in the alphanumeric form when the language of the interface is in English.

Units

Selection of the length and area measurement units.

User

Super User

Definition of the user status:

- User (FALSE): data query and update are possible (+ creation in the active layer) but it is not possible to create or delete layers or tables. Neither is it possible to modify the project or the work context.
or
- Administrator (TRUE): you may use the whole functionality of the software, specially to create or delete layers, alphanumeric tables, screen forms,…

Note:

- When using the Super User mode for the first time, encode a user name and a password when you close the ***Preferences*** dialog. These will be requested each time you connect.
- If you can't remember the user name and the password of the Super User mode, the only way to return to the initial situation is to delete the PWD tag of the « AegisProperties » file present in the **MobileSTAR**'s setup directory.

Information:

- If the value is «TRUE», you may easily define any layer as modifiable.
- If the value is «FALSE», you may only modify the layers declared as modifiable in the active composition.

Example:

```
<?xml version="1.0" encoding="ISO-8859-1"
standalone="yes"?>
<DOCUMENT version="3.0" based_on="Aegis"
  Copyright="Gistek SA -
http://www.gistek.net">
  <USERINFO su="0">
    <LASTNAME></LASTNAME>
    <FIRSTNAME></FIRSTNAME>
    <USER></USER>
    <INITIAL></INITIAL>
    <MAIL></MAIL>
    <GSM></GSM>
    <TEL></TEL>
    <PWD>{  4-106-107-120-113-114}</PWD>
  </USERINFO>
```

Last Name, First Name, User, Initial, Mail, GSM, Tel

This general information on the user is used and saved when the document is saved to SXL format.

General

Scrollbars

Display (TRUE) or not (FALSE) the vertical or horizontal move bars in the primary map window.

Gr. Info

Activation of the graphic information tool.
False = impossible to get graphic information on objects.

Inflate

Zoom on any object with a backward factor proportional to its size. Example: if, for a cadastral parcel, the ***Inflate*** value is two, zoom on this parcel will be as if it were twice bigger.

Status

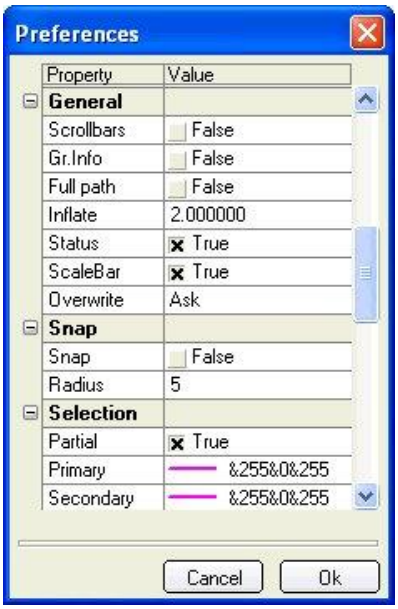
Display (or not) the status bar.

Scalebar

Display (or not) the scale bar.

Overwrite

Used to specify whether the alphanumeric data of an SXL file is systematically added or not to the alphanumeric database.
The possible values are: Ask, Always, Never.

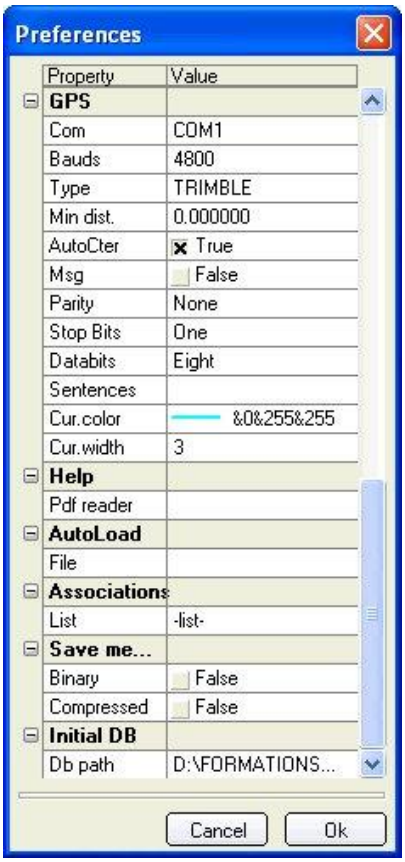


Snap

Snap	Activate the snapping mode on the object.
Radius	Define the search radius.

Selection

Partial	Selection of the objects partly (TRUE) or completely (FALSE) inside an area.
Primary	Primary highlight colour.
Secondary	Secondary highlight colour.

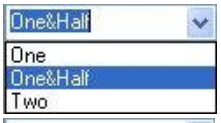


GPS

Com	Predefined list of COM port values
Bauds	Predefined list of communication speeds
Type	Type of communication protocol (TRIMBLE or NMEA)
Min. Dist.	Minimum distance between two captures
AutoCter	Automatic location on the position of the cursor
Msg	Messages displayed in a dialog box or in the status bar

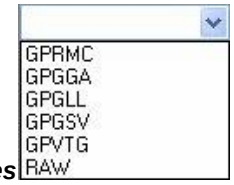
To customize communications with the COM port (for old GPS):

Parity



StopBits

Databits



Sentences

Cur. color	Colour of the GPS cursor
Cur. width	Width of the GPS cursor's line

Help

Used to specify which software is used to consult PDF manuals. Otherwise, by default, the Windows registry is used.

Autoload

Used to define an SXL file automatically loaded when **MobileSTAR** starts

Associations

Possibility to associate specific file extensions to specific software. The files linked to the project will be opened with the software associated to their extension.

Syntax: <extension>;<software_access_path>
Ex.: tif ;C:/STARVW/PROGRAM/starvw.exe

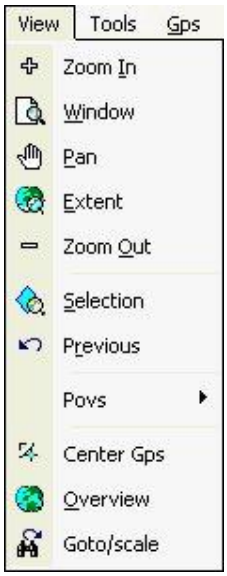
To create a new association, click on the first icon on the left.

Save me…
Binary
Compressed

Initial DB

Access path to the database which opens when **MobileSTAR** starts: by default, the one of the last file open.

The View menu



Zoom In	Zoom in
Window	Zoom by a rectangle defined by two points
Pan	Translation of the map from one point to the other.
Extent	Overview. Zoom to layers' endpoints (vector or images)
Zoom Out	Zoom out
Selection	Zoom on selected elements
Previous	Previous zoom
Center GPS	Position on current GPS co-ordinates

Povs

Use of pre-recorded frames. A sub-menu proposes the **Go**, **Add** and **Delete** options respectively to locate, add or delete a frame.

Info:

A frame is a geographic positioning (couple of X,Y co-ordinates) associated to a scale. The data loaded when it is recorded is not saved.

Overview

This function enables you to view in an independent window the overview of your current map composition. It enables you to move, to zoom or to locate versus your current position.

Note:

- You can click one point in this overview; that is a move, a translation while keeping the active scale in the primary map window.
- You can also define in the overview a window by two points. This function is quite handy to rapidly move from one place to the other.

Goto/Scale

You can encode a precise scale or select a value in a list of standard scale values.

You can also encode an X,Y co-ordinate to position on a precise co-ordinate at the scale defined here above.

The Tools menu

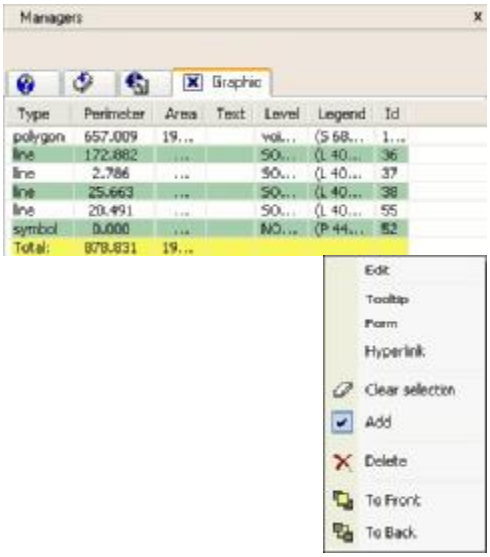
Distance, Cumulative, Surface

These functions compute a distance between two points, cumulative distances between several points and surfaces (end with double-click).
The pop-up menu of each function (right click) is respectively the same as the one to create a line, a broken line or a surface.
The result of the measurement is displayed in a label at the bottom of the graphic window. Click the box on the left to keep the label displayed.

Note:
When the «***Snap***» option is set to TRUE in the ***Preferences***, it is possible to lorg on the layers' graphic elements.

GrInfo

Once this function called for, a new tab appears and presents a table. This function gives geometric information on the selected map objects (only if the «***Info.Gr***» option is set to TRUE in the ***Preferences***). Objects are selected with the Select command toolbar.



Note:
The «***Partial***» option in the ***Preferences*** allows selecting objects either partly (TRUE) or completely (FALSE) in the area. This concerns the modes of selection by area.

Click the «**Add**» option in the pop-up menu of the selection and the information on selected objects is added to the table. Also, the sum of distances, perimeters and areas is displayed in the bottom of the table.

Index Img Layer

This menu gives access to an extremely powerful function; that is the possibility to compute and create an image layer based on a group of georeferenced images. It goes without saying that these georeferenced images may not overlap and should be adjacent, just like in a checkerboard.

To do so, select one sole image among the ones in the directory. Note that during that operation, the system has indexed images and has created an XML file called «***Layer.XML***» in the directory in which the images are stored.

Note:
This file is created with the user exits **MobileSTAR**.

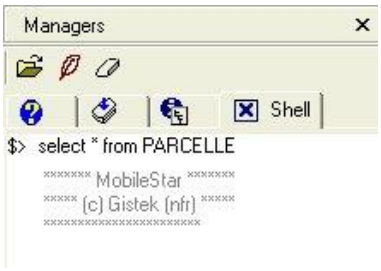
Once the image layer computed, it is displayed in an overview. First-time display may take some time. We recommend you afterwards to define the visibility scales of your image layer in the theme manager.

Image layers can be saved as reference when your map composition is saved in STAR XML format.
It is then possible to open an existing image layer with the «Open» function (choose the XML format in the list).

Note:

- **If the size of your image layer is big; that is several hundreds of Mb, try not to compute it on PDA** but with the **MobileSTAR** tablet version.
- Now, you can use this layer on your PDA.

Command/Shell



This function gives access to the command centre to encode SQL commands.

SQLite is a powerful and impressive relational database which supports the standard SQL syntax, more precisely, the following operators :

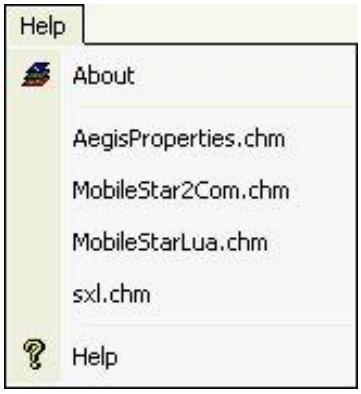
```
||
*   /   %
+   -
<<  >>  &   |
<   <=  >   >=
=   ==  !=  <>  IN
AND
OR
```

For more information on exceptions in SQL syntax, go to SQLite Web site : http://www.sqlite.org

The GPS menu

See section «2.2.4 GPS toolbar».

The Help menu



About	Software version
AegisProperties.chm	Description of the XML Aegis format
MobileStar.chm	Idle for the moment
MobileStar2Com.chm	Presentation of the Aegis library
MobileStarLua.chm	Presentation of software-integrated Lua interface
Sxl.chm	Description of the STAR XML (SXL) format
Help	On-line help

2.2.2 The toolbars

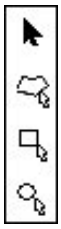
The *General* toolbar

New	New project – all loaded data is closed.
Open	Open a new vector or raster file.
Save all	Save all data (more information in the section 2.2.1.; «***File***» menu).

The *Navigate* toolbar

Zoom in	Zoom in.
Zoom by 2 points	Zoom by a rectangle defined by two points.
Pan	Move/translation of map from one point to another.
Overview	Zoom on layer endpoints (vector or images).
Zoom on selection	Zoom on selected graphic elements.
Zoom out	Zoom out.
Previous zoom	Returns to previous zoom.

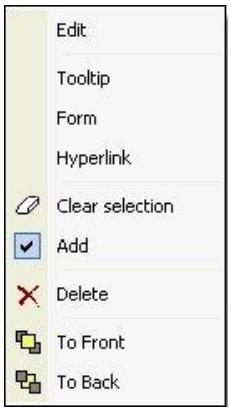
The *Select* toolbar



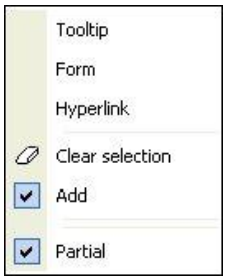
Selection by point	Selection of one sole object (click).
Selection by polygon	Selection of the objects inside a polygon created by several clicks (close polygon with double click).
Selection by rectangle	Selection inside a rectangle created by 2 points.
Selection by circle	Selection inside a circle created by 2 points.

Note:
For selections per area, the «***Partial***» option of the ***Preferences*** allows specifying whether the selection applies to the objects completely or partly in the area.
Use the pop-up selection menu to specify the actions associated to the selection of an object. These options are:

Selection by click



Selection per area



Edit — Set to ***Modify*** mode the selection of one sole graphic object (see section 3.2.3 « ***Modify/Delete***»).

Tooltip (v) — Display in a balloon help the attribute data of a table.

Form (v) — Display the form used to modify attribute data if need be.

Note:
When **MobileSTAR** starts running, the «***Form***» option is selected by default. As a consequence, each selection directly opens the alphanumeric form of the object (if it has any).

Hyperlink (v) — Display the hyperlink in the general HTML tab. It is then possible to open the document linked to the alphanumeric record.

Clear selection — Clear all selected objects.

Add (v) — Add several selections (useful for the «***GrInfo***» command in the «***Tools***» menu).

Delete — Delete the selection if the layer is active or modifiable (for selection only – not for click).

To Front — Draw the selection in front of the other objects.

Partial (v) — Specify whether you want to select objects separately or altogether for Select by polygon, rectangle or circle functions.

The *Create graphic object* toolbar

Objects are always created in the layer defined as active (see Chapter 3.3.1).
If this active layer is linked to an alphanumeric table, after each create command, the alphanumeric form of this table is displayed with an automatic incrementation of the key which is a simple counter.
So, if you want to, you can encode the attributes directly after the graphic capture of each object.

Warning: If you click «***Cancel***» to close the form, the graphic object is not created.

Line — Create a line defined by two points.

Polyline — Create a polyline defined by n points.
To close the polyline, left double-click or right click and '***Close***'.

Circle — Create a circle by two points.
The first point specifies the centre of the circle and the second, its radius.

Rectangle — Create a rectangle by two points.

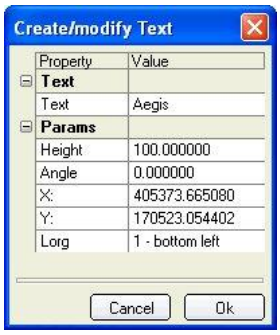
Polygonal surface — Create a polygonal surface by n points.
To close the polygon, left double-click or right click and '***Close***'.

Circular surface — Create a circular surface by two points.

Rectangular surface — Create a rectangular surface by two points.

Point — Create a point.

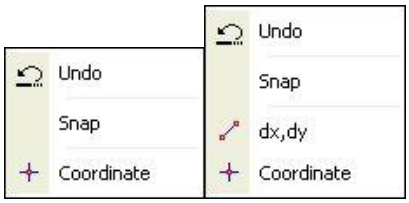
Text — Create a text by one point.
The selected point corresponds to the bottom left corner of the text.



The dialog here next is displayed and you can:
- encode text;
- define its height;
- define the rotation angle of the text around its lorg (anti-clockwise from horizontal);
- encode exact co-ordinates of the text's lorg (X, Y);
- encode the position of the text compared its lorg (from 1 to 9).

Via the pop-up Create menu, you can specify the actions associated to the creation of an object. The options are:

Pop-up menu of Lines, Rectangles or Rectangular Surfaces



Undo Cancel the current command.

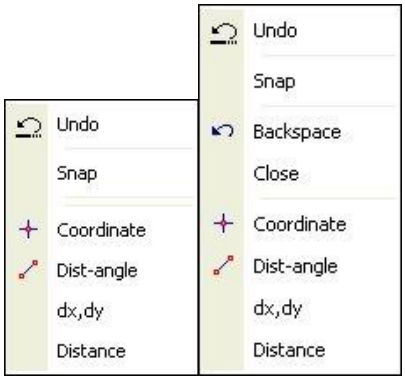
Snap Activate the "snap" mode (for the objects of point and line type located in the selectable layers).

Note:
- This mode can be defined by default in the ***Preferences*** (***Edit*** menu).
- The snap mode can be modified while an object is being created.

dx, dy Encode a move along the X and Y axes according to the current position.

Coordinate Encode a precise co-ordinate (X,Y) for the creation of the next point of the line.

Pop-up menu of Polylines or Polygonal Surfaces



Undo, Snap, Coordinate, dx-dy
See pop-up menu of Lines.

Backspace Cancel the last click.

Close End and validate the Create command.

Dist-Angle Encode a distance and an angle for the capture of the next point.

Distance Encode a distance for the capture of the next point: the angle is defined by click.

Pop-up menu of Circles or Circular Surfaces

Undo Cancel the current command.

Snap Encode a precise co-ordinate (X,Y) for the centre of the circle.

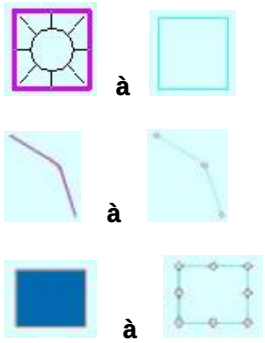
Radius Encode the length of the radius of the circle radius.

Pop-up menu of Points or Texts

Undo, Snap
See the pop-up menu of Lines.

Coordinate Encode a precise co-ordinate (X,Y) for the creation of the next point (lorg for the text).

2.2.3 The *Modify (graphic)* and *Delete* functions

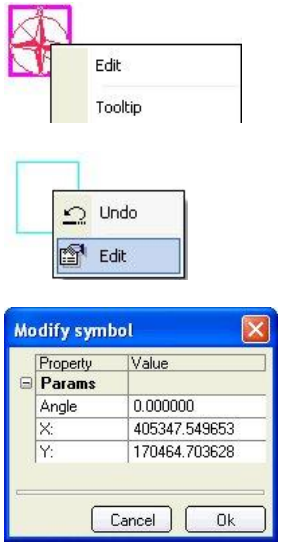


Two possibilities to switch to Modify mode:
- either you double click on one sole object with the Select by one point tool (Black arrow)
- or you select one object by one point and, in the pop-up menu of the selection, you «***Edit***».

Note:
- One sole object can be modified at a time.
- Click "***Escape***" to cancel a modification before completing it.

To delete objects, selection can be multiple ('***Add***' option in pop-up menu). So, select your objects and «***Delete***» in the pop-up menu of the selection or click «***Del***» .

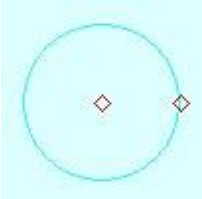
Modify Point



1. Select one sole point.
2. Left double-click or in the pop-up menu, choose «***Edit***». The point is represented by a blue rectangle.
3. You can move the point interactively on screen (click on the point, keep pressed and move it).
4. You can also move the point by encoding its co-ordinates (right click on the point and «***Edit***»).
5. In this dialog, you can also rotate the symbol.

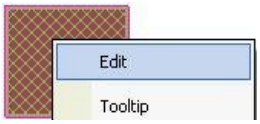
Note:
When rotated, bitmap symbols may sometimes be slightly shifted compared to the geographic position of the point.

Modify Circle



1. Select a circle.
2. Double-click or in the pop-up menu, choose «***Edit***».
3. The circle is represented by a blue circle and two points represent the centre and a point of the circle.
4. Click the line or the centre to move the circle.
5. Click the point of the circle to modify the radius.

Modify Surface, Line, Polyline or Rectangle

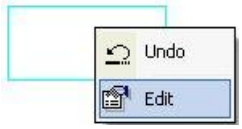


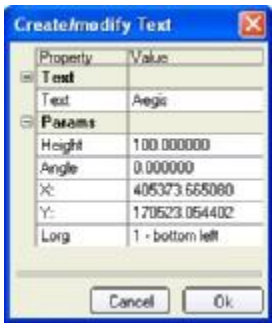
1. Select a surface, a line, a polyline or a rectangle.
2. Double-click or in the pop-up menu, choose «***Edit***».
3. When your object is in Modify mode, it is highlighted in blue and the points building up a line or a surface are highlighted by red squares.
4. Select the line of the contour to move an entire object.
5. A pop-up menu of points allows adding, deleting or moving a « vertex »; that is a construction point. Each point can be freely moved.
   Set coordinate Display the co-ordinates (X,Y) of the construction point.
   Move Move with specific values (dx,dy).

Note:

- Simple rectangular surfaces are modifiable only proportionally (a point can not be moved alone).
- In polygonal surfaces, however, each point can be moved independently of the others.
- The pop-up menu of construction points is available only for polylines and polygonal surfaces; it is therefore not possible to delete the vertex of a simple rectangular surface.

Modify Text





1. Select a text.
2. Double-click or in the pop-up menu, choose «***Edit***».
3. When your object is in Modify mode, it is highlighted in blue.
4. You may use in the "***Edit***" pop-up menu a dialog to modify the parameters of the text:
   - Its content.
   - Its height.
   - A rotation angle.
   - The co-ordinates of the lorg.
   - Its position compared to its lorg.
5. The whole text can be moved altogether (click on the rectangle).

Note:

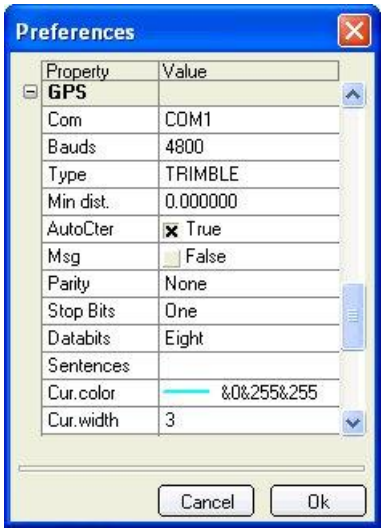
The style of the text is modified via the legend editor (see chapter 3.3.4). Possibility to choose a font and the usual options such as bold, italic or underline styles.

2.2.4 GPS Toolbar

On the ground, the GPS technology makes data capture easier, faster and more accurate. **MobileSTAR** allows connecting to any GPS which supports the NMEA (National Maritime Electronics Association) protocol and TRIMBLE GPS.
Here is the functionality of the GPS toolbar of **MobileSTAR**:

Point	Captures point corresponding to the current GPS position.
Path (Trace)	Captures path in line mode of «n» points.
Validate Path	Closes and validates the current path.
Delete Path	Closes and deletes the current path.
Close connection	Closes communication with the COM port.

GPS connection parameters



The GPS connection parameters are displayed in the ***Preferences*** of the application (see Section 2.2.1. ***Edit*** menu) :

- Predefined list of COM port values
- Predefined list of communication speeds (Baud rate)
- Protocol type (NMEA or TRIMBLE)
- Minimum distance between two captures
- Automatic location on cursor position
- Messages displayed in a dialog box or in the status bar
- Communication parameters with COM port (for old GPS)
- GPS sentences
- Colour of GPS cursor
- Line width of GPS cursor

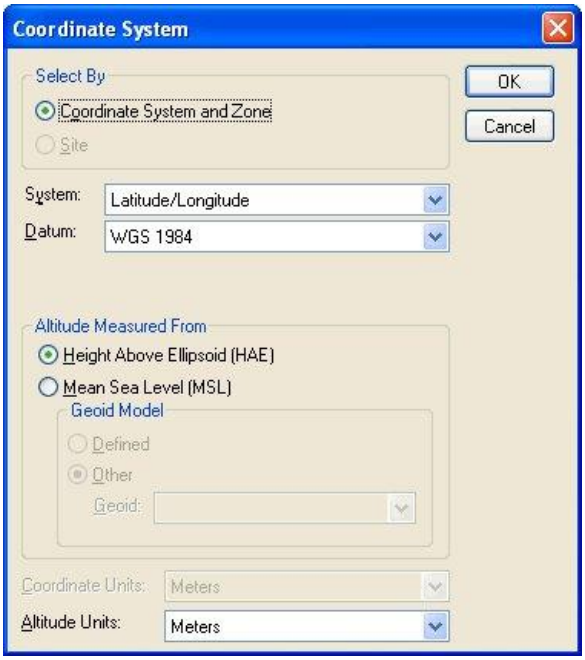
Warning:
If you haven't connected your GPS to your PDA or Tablet PC yet, we recommend you to have the « Msg » parameter set to FALSE. This to avoid displaying multiple dialog boxes in case of bad connection. With a FALSE value, messages appear in the status toolbar.

The GPS menu varis the selected protocol (TRIMBLE or NMEA):

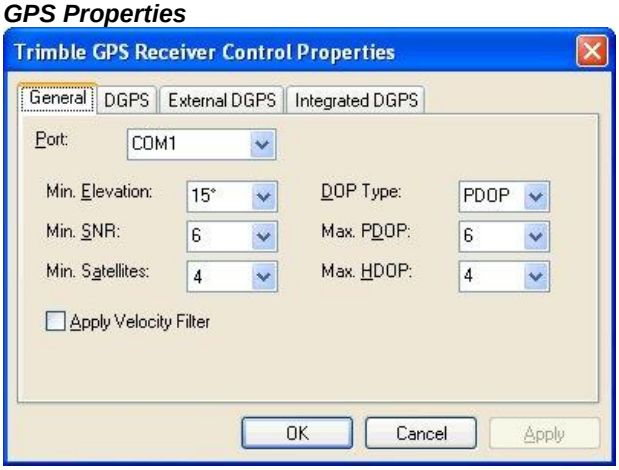
1) TRIMBLE

Status

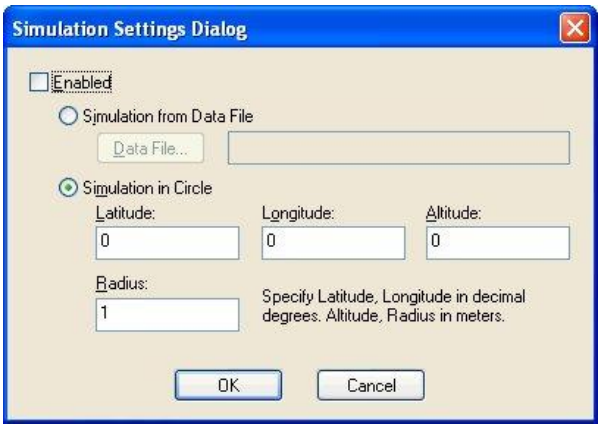
Projections
Selection of the co-ordinate system.



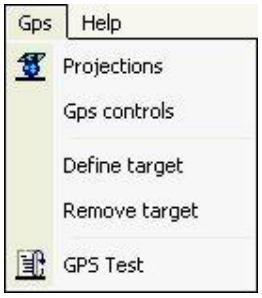
GPS Properties



Emulation

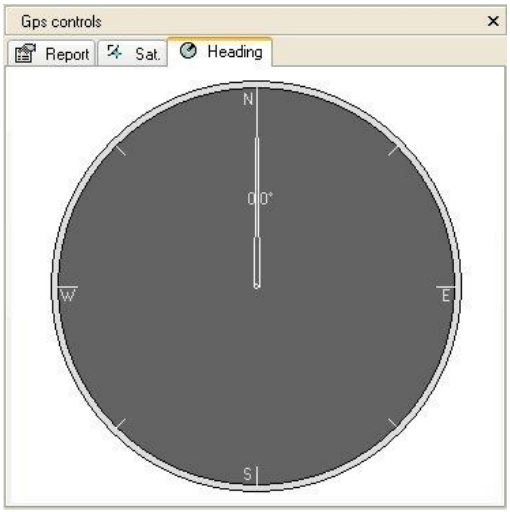


2) GPS using the MNEA protocol

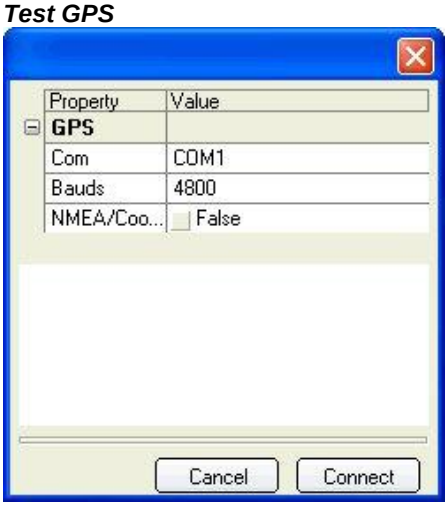


Projections
Selection of the co-ordinate system.

GPS Controls

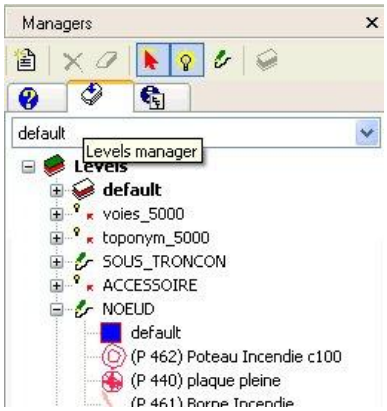


Test GPS



2.3 The Theme Manager (TM)

2.3.1 General presentation



The theme manager is the administration tool used to:

- Define display or not of each layer and its visibility scales.
- Define a unique layer as « Active » layer; that is the layer in which newly created objects are saved.
- Define which symbology is used in Create mode (legend).
- Access the legend editor.
- Define a link between a layer and an alphanumeric table with the selection of a unique key field as counter.

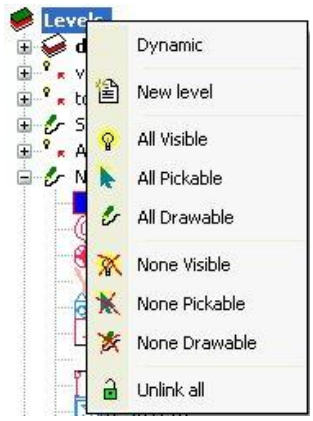
The TM's general toolbar presents the following functions:

New (*)	Create a new layer.
Delete (*)	Delete the layer (confirm message).
Erase (*)	Erase all objects of the Active layer.
Pickable	Define the layer as selectable.
Visible	Define the layer as visible.
Drawable (*)	Define the layer as modifiable.
Active	Define the layer as «**Active**». To activate a layer, it must modifiable.

(*) Function in Super User mode only (see section 2.2.1. - «Edit» menu).

Note:
Only the layers defined as «***drawable***» by the Super User can be activated.

2.3.2 Pop-up menu of general themes

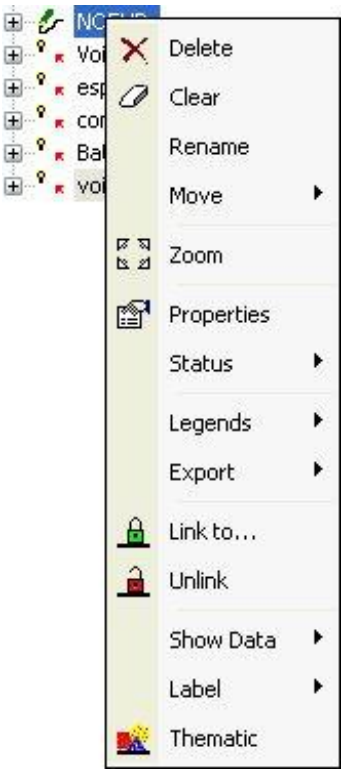


Dynamic (v)	Set the layer manager as dynamic. Only on-screen layers are listed.
New level (*)	Create a new layer.
All Visible	Define all layers as visible.
All Pickable	Define all layers as selectable.
All Drawable (*)	Define all layers as modifiable.
None Visible	Define all layers as non visible.
None Pickable	Define all layers as non selectable.
None Drawable	Define all layers as non modifiable.
Unlink all	Delete all links between the layers and alphanumeric tables.

(*) Function in Super User mode only (see section 2.2.1. - «Edit» menu).

2.3.3 Pop-up menu of specific theme

(*) Function in Super User mode only (see Section 2.2.1. - «Edit» menu).



Delete (*) Delete the layer.

Clear (*) Clear the content of the layer.

Rename (*) Rename the layer (= double-click on the name).

Move Move the layer (up, down).
The layer at the bottom of the list is plotted last (on top of the other layers).

Zoom Zoom on the endpoint co-ordinates of the layer.

Properties Access to the properties of the layer:

- ***Visibility***
  Visibility scale range of the layer.
- ***Envelop***
  Endpoint co-ordinates of the layer.
- ***Elements***
  Number of graphic elements of the layer.
- ***Source***
  Place of the SXL file on the hard drive.
- ***Link***
  Information on the link between the layer and the alphanumeric table (table name, key field,…).

Status Modify the status of the layer (Visible, Pickable, Drawable, Current=Active)

Legend Access to the general tools of the legend:

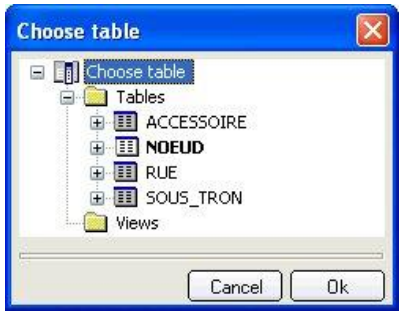
- ***Add*** Create a new legend type

- ***Pack*** Not active in the present version

Export Possibility to export the selected layer to different formats:

- ***Shape*** Export to SHAPEFILE
- ***Dxf*** Export to DXF
- ***Dgn*** Export to DGN
- ***Sxl*** Export the layer to an SXL file
- ***Save legends*** Obsolete function
- ***Save updated*** Save what's been created and changed in the layer in a ***spatial project*** (same as ***« File/Export/Save updated***» but only for the selected layer)

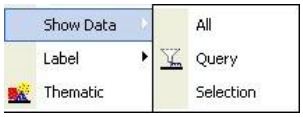
Link to Associate a layer to an alphanumeric table by selecting one sole field as unique key of counter type.



Note:
The type of the key field must always be «INTEGER». The software automatically handles the incrementation of this field when a new record is created.

Unlink Delete the link between the layer and its associated table. When this command is displayed, a link already exists between the layer and an alphanumeric table.

Show data Open a new tab (table) that contains:

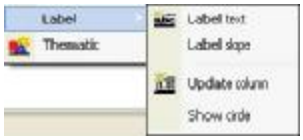


- ***All*** All the records of the linked table.
- ***Query*** The records that meet the SQL query (edited in the dialog here under).

- ***Selection*** The records selected in the graphic window.

Label

Used to create labels (graphic texts) based on a field of the object-linked alphanumeric form. The text size is given by the "***default***" legend of the layer.



- ***Text column*** Display a label on linked objects with the content of a field of the table.
- ***Label Rotation*** Idle in this version.

That tool can also be used to visualise the objects updated by the user on the ground.

- ***Update column*** Display a label with the status of the object (see section «2.4.4 Creating screen form» on the special field types). Choose in the list the field of «Update» type.
- ***Show circle*** Draws a circle around the updated objects (objects with status = 1 in the «update» field).

Note:
To delete labels, activate the «***Label/Text column***» command, click «***None***» and OK.

Thematic study

Used to create a thematic study on the layer. Choose the field of the linked table to which the thematic study will apply. A window displays the properties of this thematic study (the number of classes and graphic objects involved).

2.3.4 Pop-up menu of legend type

Edit Use of the legend editor to modify the symbolic representation of a legend type (see under).

Rename Rename a legend type.

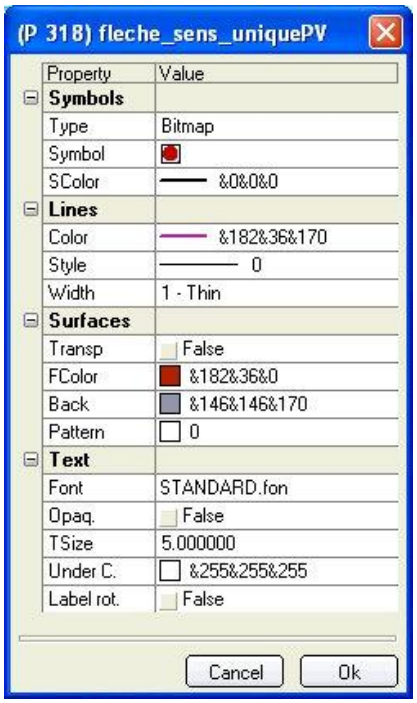
Default Define a legend type as default legend for the creation of new objects in the layer (= double-click on the legend's name). The default legend is displayed bold.

Selection This sub-menu modifies all legend types for a selection of objects or overlays another legend type to create combinations between legend types.

Selection sub-menu

Change	Modify the legend type for all on-screen selected objects.
Background	Overlay another legend type to create combinations of legends (complex legends: a motorway for instance).
No background	Clear the combination of two overlaid legends.

Edit legend type

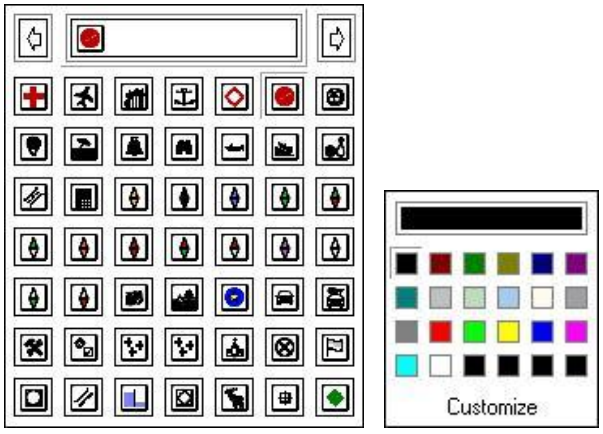


Symbols: Definition of the point legend

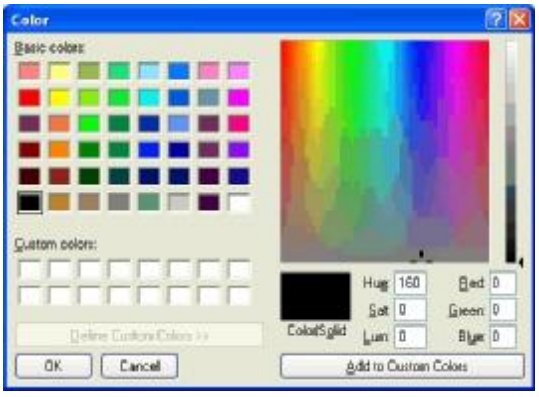
Type Specify whether predefined symbols (Vector, Bitmap, Emf) or TrueTypes font symbols are to be used.

Symbol Selection of a TrueTypes font symbol defined in the «Text» section (here, STANDARD.fon).

SColor Selection of the symbol color.



Customize Define colours other than the ones proposed in standard.

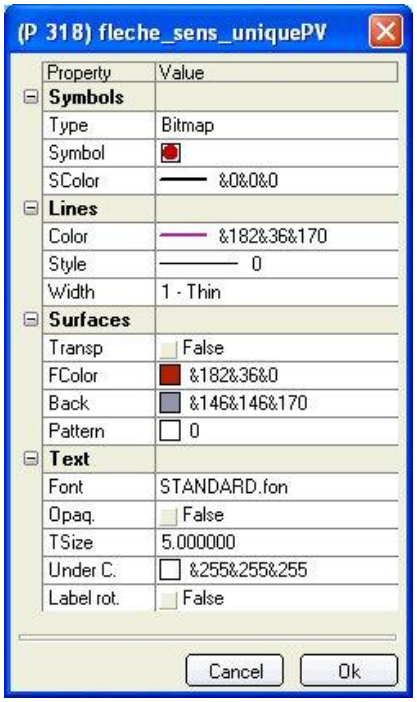


Note:
The size of the symbol is defined in the '***Size***' field of the '***Text***' section.

Information:

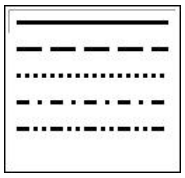
- TrueTypes symbols should be used as they are correctly exported from Star GIS.
- You can create your own TrueTypes Fonts with a software product available in the TOOLS directory on the CD. This software, « Font Creator Program 4 », is valid for 30 days.

- Some Fonts for point symbols are installed during Setup on PC or PDA. They start with the word "**MobileSTAR**".
- To install your own Fonts, copy them to C:/WINDOWS/Fonts.
- If you want to use "vector" symbols, use the conversion tool (FON2BIN.exe) to convert Star GIS symbol files.



Lines: Definition of the line legend

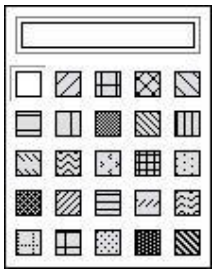
Color Selection of the line colour.
Style Selection of the line type.



Width Selection of the line width (1 to 9).

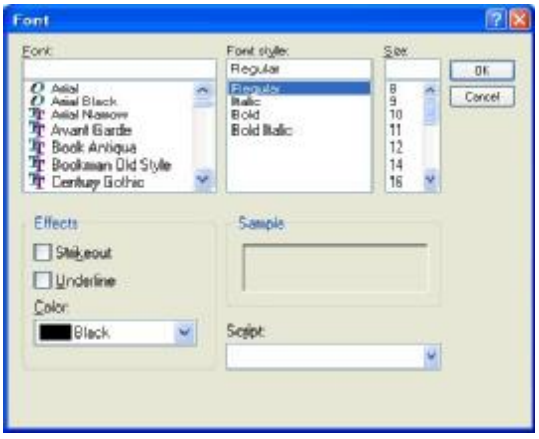
Surfaces: Definition of the surface legend

Transp Definition of transparency (TRUE) or not.
Fcolor Selection of the foreground colour.
Back Selection of the background colour.
Pattern Selection of the pattern to draw the surface:



Text: Definition of the text legend

Font Selection of a TrueTypes font to choose a Windows font or a library of symbols. Selection of the size, type and colour.

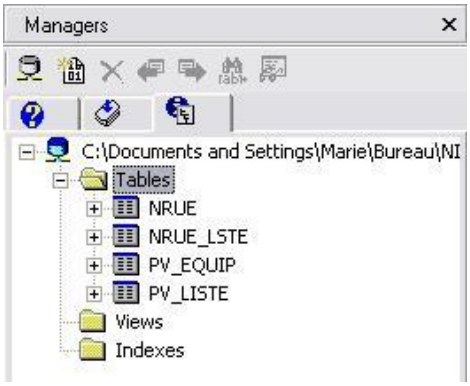


Opaq. Display an opaque surface (chip) behind the text.
Tsize Define the size of the text (and of the symbol of the point legend).
Under C. Selection of the colour of the opaque surface (label or chip).

Label rot. Apply a rotation to the label («***Label/Label Rotation***» button of the pop-up menu of a layer).

2.4 Alphanumeric database manager (RDBMS)

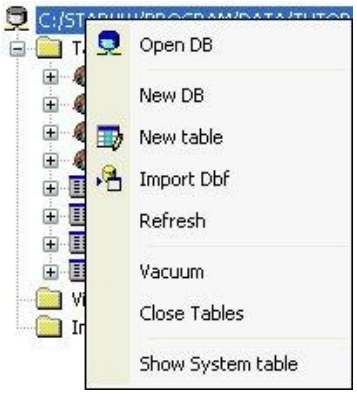
2.4.1 General presentation



The RDBMS manager is the administration tool used to:

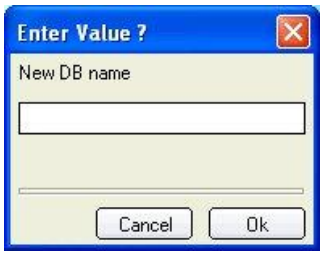
- Open or create a new Sqlite database («*.db» extension).
- Open the content of an alphanumeric table in table mode with/out conditions on attributes.
- Access an SQL query generator, be able to save them or load predefined SQL queries.
- Create new alphanumeric tables with restrictions on specific fields.

2.4.2 General pop-up menu of the SQLite database

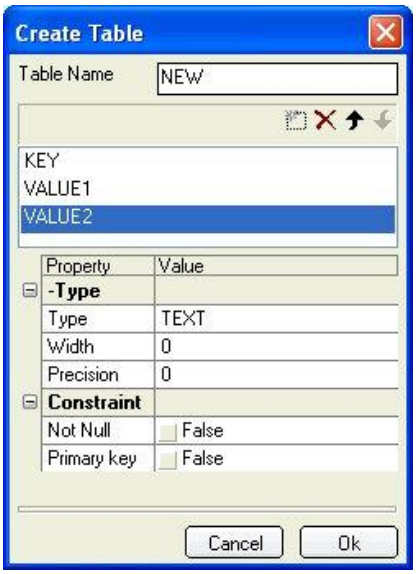


Open DB (*) Open a new SQLite database (.db).

New DB (*) Create a new SQLite database.



Create Table (*) Create a new alphanumeric table



In the next dialog :

- Type in a table name
- Type in field names
- Specify the parameters of each field:
  - o The type.
  - o The width.
  - o The precision.
  - o The constraints:
    - § Not Null (the field may not be empty)
    - § Primary key

Note:

The type of the «primary key» field must numerical because the software automatically increments it during the Create process.

The toolbar of the dialog presents the following functionality:

Create a new field
Delete the selected field
Move up the selected field
Move down the selected field

Import Dbf Import DBF data to an existing table.

Refresh Idle in the present version.

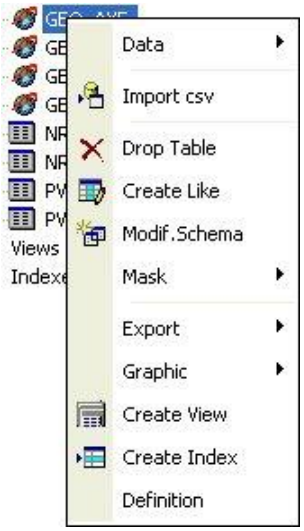
Vacuum (*) Compress the current SQLite database.

Close tables Close all open tables.

System tables (v) (*) Display the system tables (= that have the definition of the screen masks (called « _TABLE »)).

(*) Function in Super User mode only (see section 2.2.1. - «Edit» menu).

2.4.3 Pop-up menu of alphanumeric table



Data Display in a table all or some of the attributes of an alphanumeric table. This for all records or with conditions on specific fields.

- ***All*** Display the whole data of the table.
- ***Select*** Display the data that meets the criteria of the SQL query.

Import CSV (*) Import an ASCII file of CSV type to an existing alphanumeric table.

Drop table (*) Delete the table.

Create like (*) Create a new table with the copy of the structure of an existing table. The data is not copied, only the structure is.

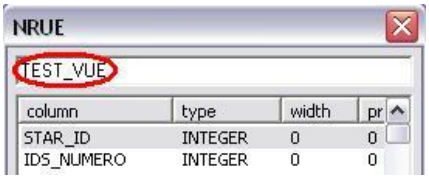
Modif. Schema (*) Modify the schema of the alphanumeric table: add, delete or modify field parameters.
Same dialog as the one used to create an alphanumeric table.

Mask (*)

- ***Edit*** Edit the mask associated to the alphanumeric table to do changes.
- ***Delete*** Delete the mask of the table.

Export Export a table to a CSV, SQL, DBF or SXL file.

Create View Create views. A view allows creating a virtual table resulting in fact from an SQL query created from an existing alphanumeric table.



Note:

- It is not possible for the moment being to create views on several tables.
- Make sure you type in a name to the view you create.

Create Index Create an index from one or more fields of an alphanumeric table.

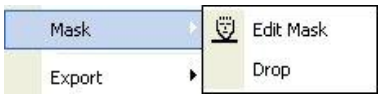
Definition Access to the definition of an alphanumeric table in terms of SQL syntax.

(*) Function in Super User mode only (see section 2.2.1. - «Edit» menu).

2.4.4 Creating screen form or mask

As already said, this function is accessible via the alphanumeric database manager. Select any table and ask for its pop-up menu. A menu with the «Mask» section is displayed as shown here under:

***Mask* sub-menu**

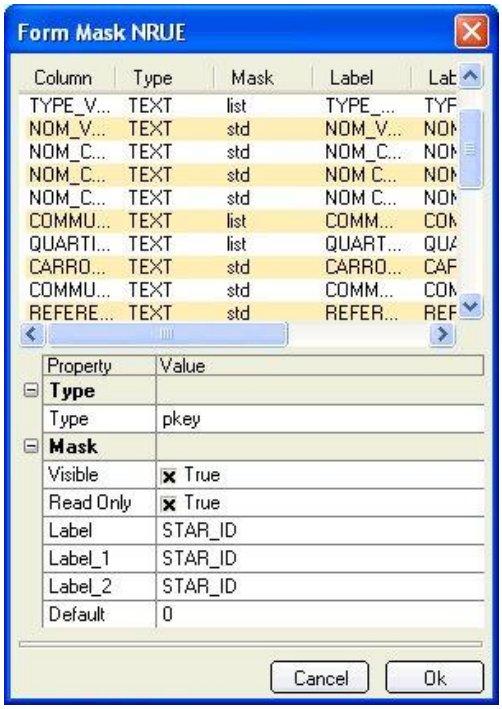


The «***Mask/Edit***» function allows creating a screen form or mask from the alphanumeric table already linked to a theme (see the «***Link to***» function of the layers' pull-down menu). Creating masks is possible only in Super uUser mode (see ***Preferences*** of '***Edit***' menu).

Each table must contain at least one field of ***PRIMARY KEY*** type which must be of ***INTEGER*** type. With this field **MobileSTAR** can create a counter and a unique key for each record of the table.

Each field has a pop-up menu reachable by mouse click (right) from the highlighted alphanumeric field. It allows moving the field in the list or adding a title (see here under).

You now have the following dialog box:

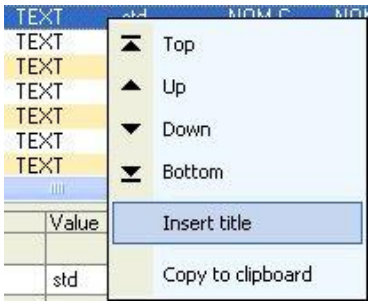


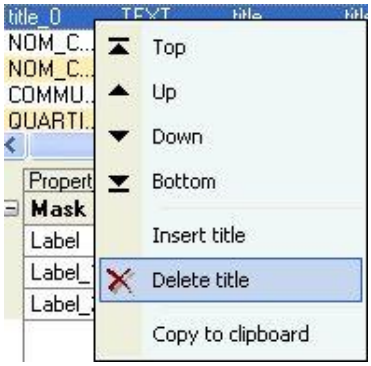
In the list, you have:
- Column: the name of the field.
- Type: the field type (Text, Integer, Small Integer, VarChar, Boolean, Date) defined by «***Modif. Schema***» in the pop-up menu.
- Mask: the field type in the mask (see here under).
- Label: the name of the field as it appears in a form.

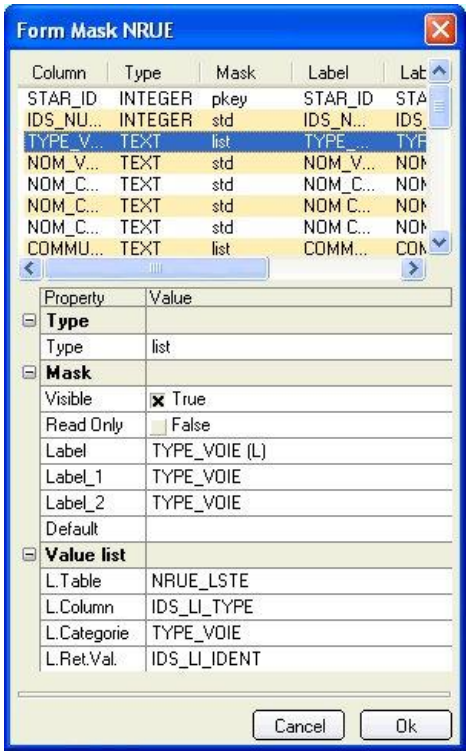
The field properties are defined here under:

Type Define the field type. The options are:

std	free encoding field.
pkey	key field.
list	field of list type contained in another table.
depends	field of list type contained in another table, dependent of the value of another 'list' field.
subform	field used to link sub-forms.
hyper	field used to associate files.
bound	field of 'limit' type.
update	alphanumeric update field (new function).
Note:	The word "Update" is reserved. Don't use it as field name!
gps x, y and z	use automatically the x, y and z co-ordinates of the GPS in Create or Modify mode.
latitude	use automatically the latitude in Create or Modify mode.
longitude	same as 'latitude'.
today	use automatically the Create or Modify date.
now	use automatically the Create or Modify time.
user	uses the name of the user who has created or modified it.







title field of 'title' type used to split the mask into sections.

Note:
To insert a field of «title» type, click for the pop-up menu of any field and choose '***Title***'. The title field will be added right before this field. A title can be deleted via its pop-up menu.

date field of 'date' type. Accepted data formats are «YYYY-MM-DD HH-MM-SS » and «YYYY-MM-DD».

Visible Specify whether the field is visible or not.

Read only Specify whether the field is modifiable or not.

Label Name of the field that will appear unshaded in the form and balloon helps (Tooltip).

Label_1 Name of the field that will appear in the second language selected in the ***Preferences*** (Label_1).

Label_2 Name of the field that will appear in the second language selected in the ***Preferences*** (Label_2).

Default Default value when encoding new objects.

Parameters for lists with "List" defined values

L. Table Alphanumeric table with list(s) values.

L. Column Field of the «***List***» table in which values are filtered. Allows to have one table with all lists values but also to define a section.

L. Categorie Value to filter the list. A section is defined.

L. Ret. Val. Specify which field of the «List» table is used as return value.

Parameters for lists of "Depends" type

L. Table Alphanumeric table with list(s) values.

L. Column Field of the «***List***» table in which values are filtered. Allows to have one table with all lists values but also to define a section.

L. Categorie Value to filter the list. A section is defined.

L. Ret. Val. Specify which field of the «List» table is used as return value.

Parameters for fields of "Bound" type

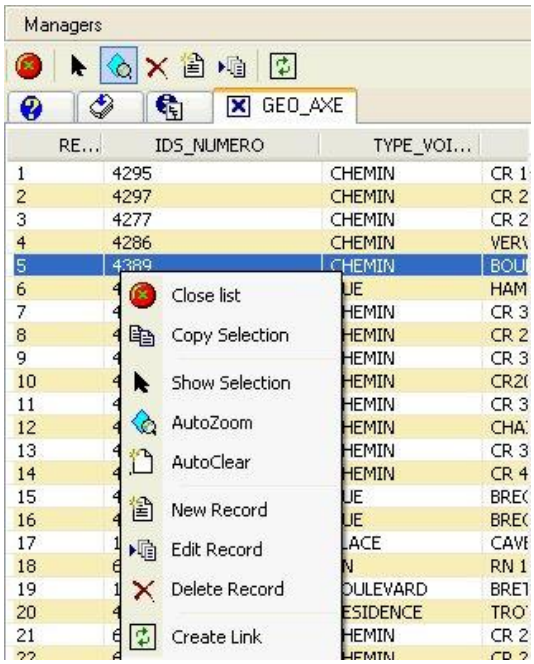
Lower Bound Minimal value.

Upper Bound Maximal value.

Using photos or multimedia documents
Multimedia fields are exportable directly from StarGIS and afterwards in **MobileSTAR**.
Note:
To have documents be opened by **MobileSTAR** or GeoViewer, it is necessary to create a directory where the SXL file is located and with the same directory name as the one given in the absolute path to the photo.
Example: C:/PROJET/GEOVIEWER/PHOTOS/.jpg
JPG photos are copied in a directory called « PHOTOS » at the same place as the SXL file.

WARNING! Photos with a name longer than 8 characters are not displayable by GeoViewer !

2.4.5 **Pop-up menu of table records** (same as toolbar)



Copy selection
Selection is possible from the alphanumeric table. To do so, use the traditional Windows tools: CTRL (to select several lines that do not follow), SHIFT (to select all the lines between 2 clicks), left click maintained and pressed on several lines.
This command copies the selected records and pastes them in a spreadsheet (for instance: EXCEL).

Show selection
Highlight the selected object.
By default, as soon as the record is clicked on, the software sets on the object and highlights it.

AutoZoom
Zoom directly on the object.

AutoClear
Clear the current selection.

New record
Create a new record in the alphanumeric table. This function opens the alphanumeric form to be completed by the user. The key field (here, STAR_ID) is automatically incremented.

Edit record
Modify the data of the selected record.

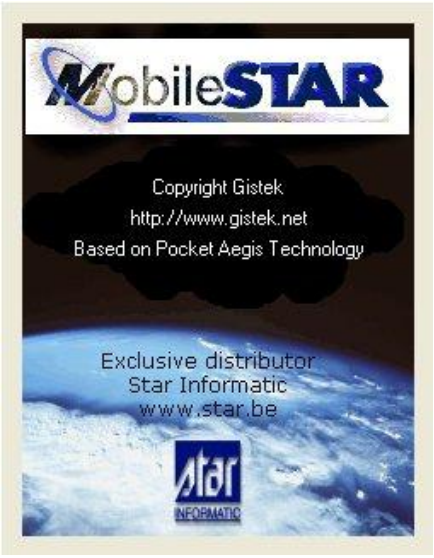
Delete record
Delete the selected record.

Create link
Link the alphanumeric record to a graphic object. After having activated the command, select any object in the layer linked to the table.

Note:
If this object was already linked to another record, this first link is deleted and replaced with the new one!

2.5 Customizing HTML tab and startup screen

You can add URL to reference Web sites. Very handy function to create city plans on CD-ROM with GeoViewer.



HTML TAB

1. Home

If the setup directory of **MobileSTAR** or **GeoViewer** contains an «HTML» directory which contains an HTML page called «index.html», this page will be the one first displayed.

If there is an «HTML» directory at the place of the **STAR XML file** which contains an HTML page called « index.html », this page will be displayed after the file is loaded.

These functions enable you to customize your application by adding your own on-line helps created in MS-Word via HTML export. You may switch from one HTML page to the other with the possibility of including images,...

Note:
As from V4.1, Javascript can be used in HTML pages. This will enable you to create scenarios, sequences of functions with **MobileSTAR** basic functions and its dialog box creation tools.

2. Document Report

General information on the document: co-ordinates of endpoints, number of objects,…

3. Selection Report

General information on current object selection: information on geometries with sums computed when several objects selected.

STARTUP SCREEN

Possibility to customize the image that will appear in the startup screen.

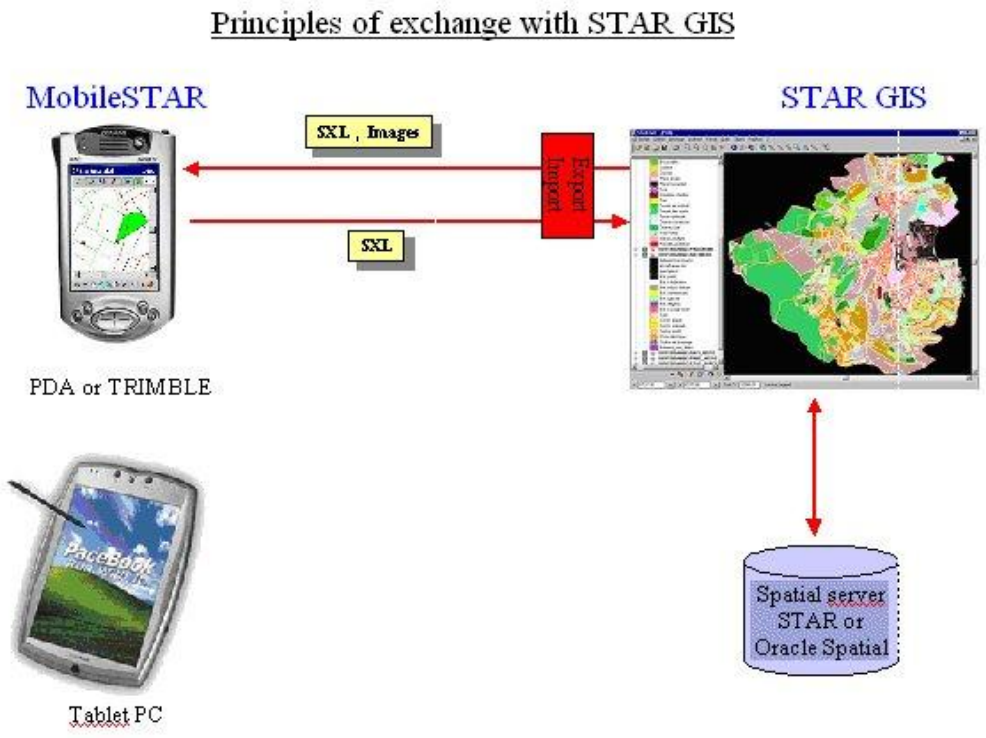
Simply create in the setup directory of **MobileSTAR** or **GeoViewer**, a « LOGO » directory that will contain a « LOGO.BMP » image of approximately 320 pixels (height) and 250 pixels (width).

This logo will appear at startup and via the « About » function in the «Help» menu.

3. Exporting data from STAR GIS

3.1 Introduction

The office **STAR GIS** software is used to export and synchronize your data with **MobileSTAR** as shown here under:



Warning, **STAR GIS** must be used in Client / Server. To do so, the spatial server of STAR-APIC: « CXserver » will be used. It can be CXserver or Oracle Sc.

This « CXserver » component, also called GIS Service, can be setup from **STAR GIS** 6.2 CD-ROM.

As a consequence, your **STAR GIS** session must use a connection to the «CXserver» GIS Service. This is explained in chapter 3.1.4.

3.1.1 Installing IMPORT / EXPORT tools

Warning! Before starting setup, make sure that you have **STAR GIS** V7. Otherwise, make sure to install first this version.

To install the **MobileSTAR** Plug-in in Star GIS, execute the «setupfr.exe» program present on the CD-ROM in the «MOBILESTAR_STARGIS_SETUP» directory.
Setup must be done in the Star GIS setup directory (STARVW).

Simply follow the wizard that will also install a “Tutorial” database to let you rapidly discover the software (chapter 2).

3.1.2 Presentation of the MobileSTAR toolbar

Here is the new **MobileSTAR** toolbar when STAR GIS starts running:

1. Export STAR GIS composition.
2. Export several compositions in « batch » mode.
3. Import SXL file from **MobileSTAR**, preview mode.
4. Temporary file integration via STAR spatial server (Cxserver).
5. Cancellation of temporary integration.
6. Final validation of temporary integration.

Note:

- To display the **MobileSTAR** icon toolbar in the interface, edit the properties of the session and add the «***MobileStar***» profile (see Section 3.1.4).
- A specific licence is required to use the export tool to **MobileSTAR**.

3.1.3 Preparing your STAR GIS composition

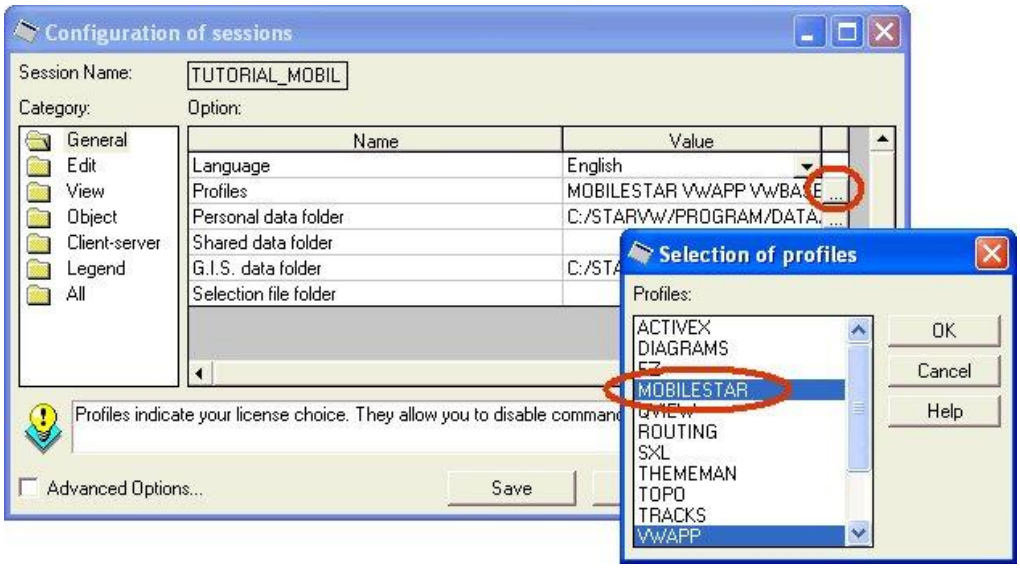
The layers you declare as modifiable in **STAR GIS** will be the layers modifiable on the ground with **MobileSTAR**. The other ones will be, thus, usable in Select mode, as background or for location but they will never be active for creation.

If you don't want to have all construction points from the **CARTO WinSTAR** topology, you must define a type of geometry for the layer. Example: for a layer with cadastral parcels, you can define the layer as of «Surface» type.

3.1.4 Configuring your session in STAR GIS

Here is the configuration needed to create a work session with the «**MobileSTAR**» profile in **STAR GIS**.

1. <u>Definition of «MOBILESTAR » profile in General section</u>



Warning! You must have a license given by Flexlm code to be able to use the toolbar associated to the **MobileSTAR** profile. Otherwise, contact STAR-APIC hotline:
<u>support@star.be</u> or <u>support-be@star-apic.com</u>

Note also that, just like the other files created by a user in **STAR GIS**, the SXL export and import files are created in the «***Personal data directory***» of the session.

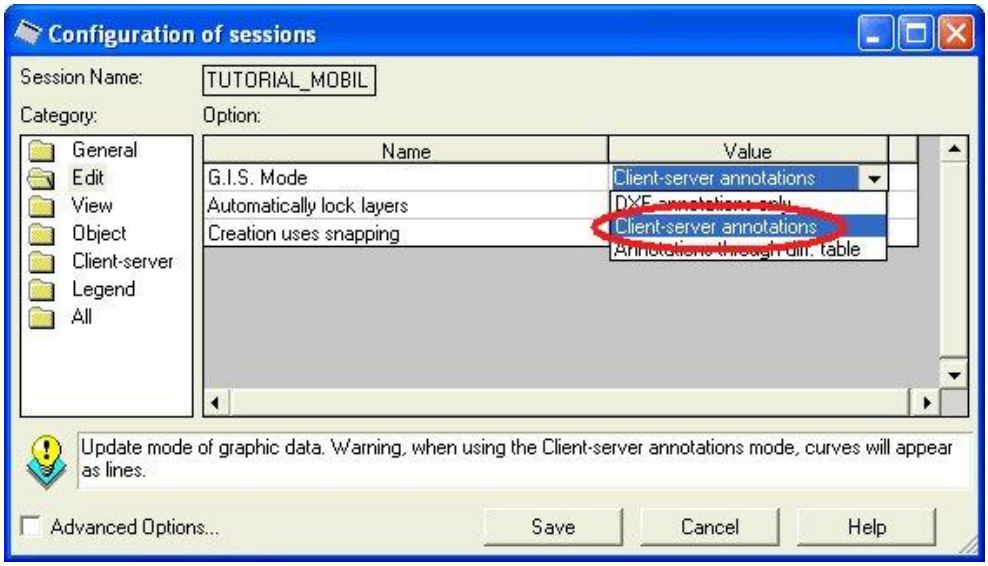
By default, if you don't specify any «***Personal data directory***», the export and import files are created in the directory here under:

C:*starvw**PROGRAM**TOOLS****session_name***xml*

- « ***C*** »: the drive in which **STAR GIS** is setup and «starvw» directory which can be: C, D,….
- « ***session_name*** »: the name of your **STAR GIS** session used for your exports.
- **STAR GIS** creates an « **Export** » and « **Import** » directory in this directory.

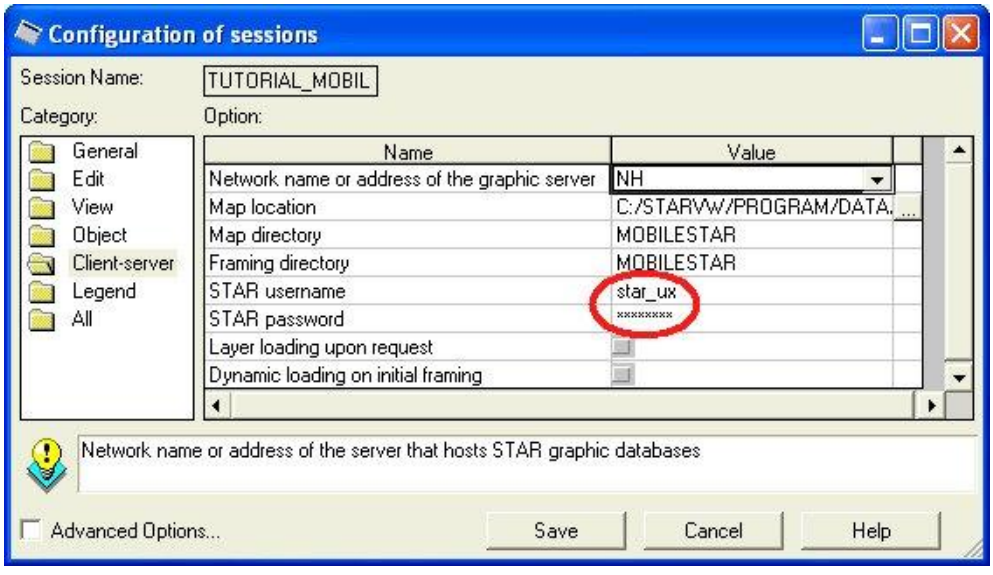
2. Definition of Client / Server configuration

Mandatory selection of the Client / Server mode in the «***Edit***» section as shown here under.



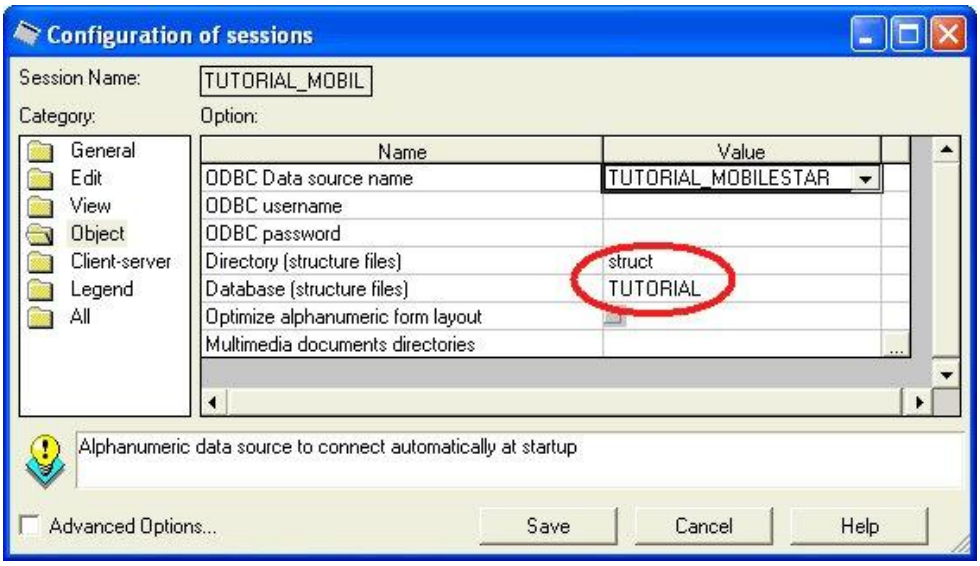
In the «***Network***» section, you must choose a network address for the map server. Then, specify the place of your maps and of your work directory for the maps and zooms and finally, encode a STAR user name known by CXserver, the STAR spatial server.

If you want to know all user names or create a new one, edit «user_file» in «…\users\server» or contact your administrator.



3. Definition of ODBC source

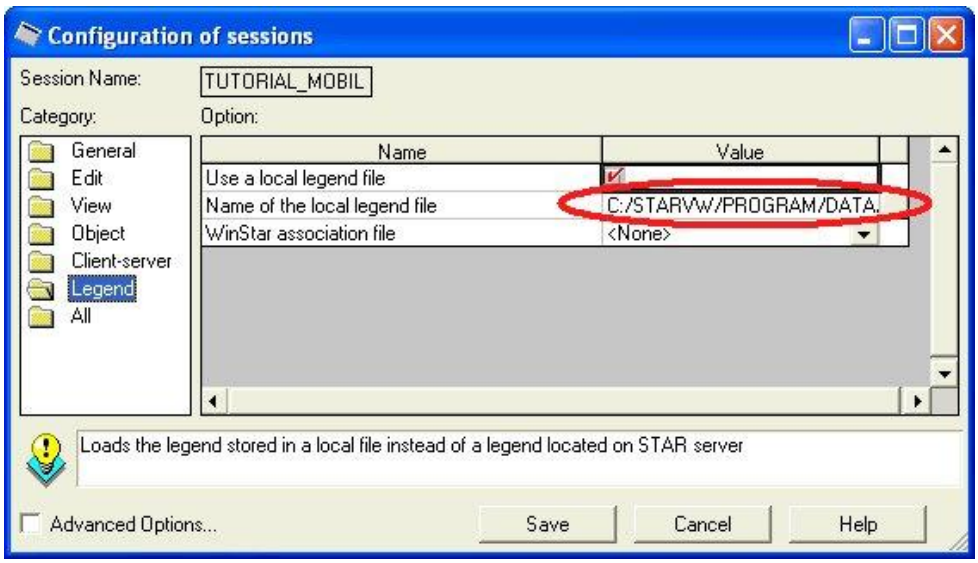
In « ***Object***», choose the ODBC source or ORACLE alias used to access the alphanumeric data. With an ORACLE database, enter the name and password of the user. Structure files will be also given directory and database names.



4. Definition of local legend in «Legend» section

If your **STAR GIS** version has network access to the data via the STAR spatial server, the client/server legends probably do not suit you.

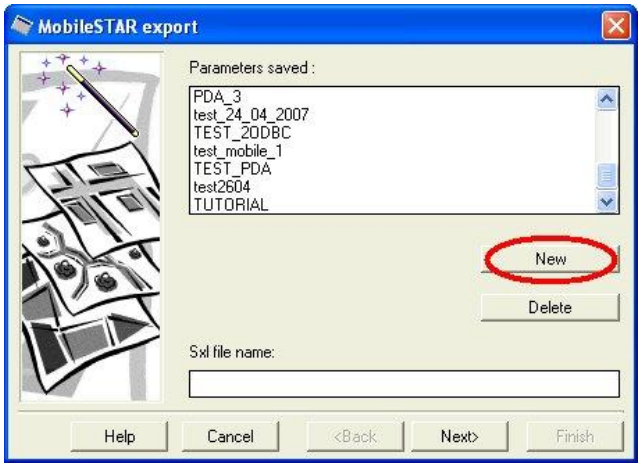
That is why we recommend to create in **STAR GIS** a local legend file (*.leg file). This will allow you to adapt the legends in **STAR GIS** for a transfer adapted to **MobileSTAR**. This local transfer is handled by the record wizard of the «***File***» menu.



3.2 Presentation of the export wizard

Here is the procedure to export from **STAR GIS** to **MobileSTAR**:

Step 1 Creation of new export configuration file

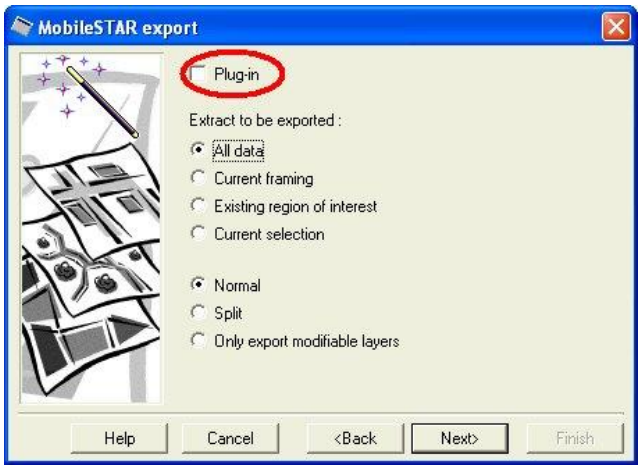


The first icon in the **MobileSTAR** toolbar launches the export wizard.

You can either use an export configuration file or create a new one. You can also delete existing configuration files.

The second icon in the **MobileSTAR** toolbar launches several exports in Batch mode. This function is very useful to export all maps or extracts in one go.

Step 2 Definition of geographic area



Step 2 consists in defining:
1- the geographic area to be exported. The possibilities are :

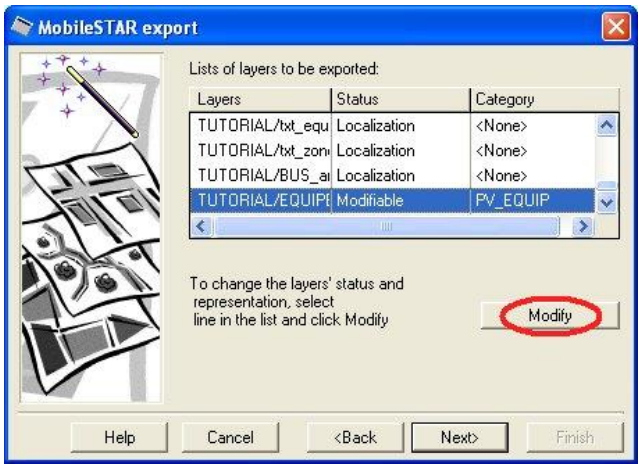
- All the data loaded in your **STAR GIS** composition.
- The current framing on screen.
- A region of interest already defined in **STAR GIS**.
- A current selection of objects in **STAR GIS**.

2- the type of export:

- ***Normal***: all layers are exported in one SXL file.
- ***Split***: the modifiable and non-modifiable layers (background and location) are exported in 2 different SXL.
- **Only export modifiable layers**.

The «**Plug-in**» option must be deselected if STAR GIS compositions or CARTO maps are used in client-server.
This option is useful when layers are stored in the database (for instance: ORACLE Spatial).

Step 3 **Lists of exported layers**

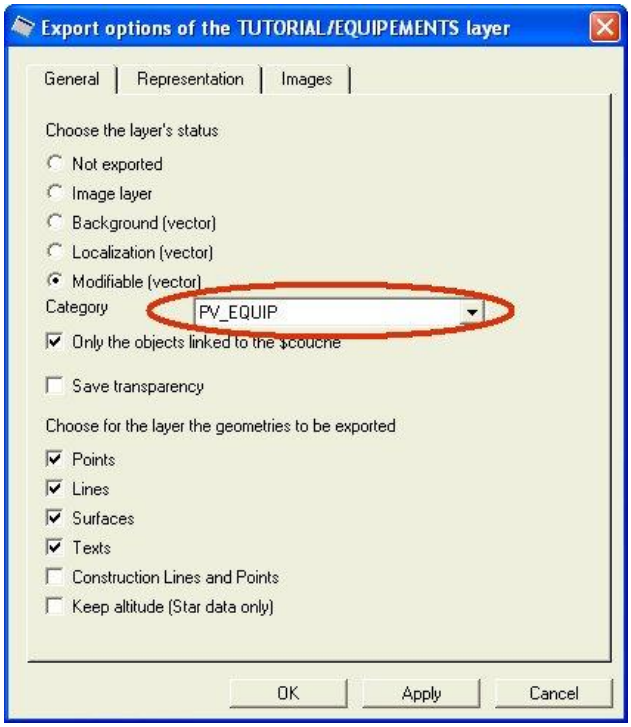


Step 3 consists in defining the operating status of each map layer in **MobileSTAR**.

Statuses are detailed at next step.

The layers used for location or modification must be associated to one category; that is an alphanumeric table.

Step 4 **Definition of modifiable map layers**



Each exported map layer will have its own work status in **MobileSTAR**. The statuses are :

Not exported
The layer is not exported.

Image layer
The layer is exported as image layer (see step 6).

Background (image layers)
See step 6.

Localization (vector)
You may choose to associate - or not - an alphanumeric table to the exported layer. If it is the case, the layer can be used for location queries in **MobileSTAR**.

Modifiable (vector)
An alphanumeric table needs to be associated to a (modifiable) layer to allow updates in **MobileSTAR**.

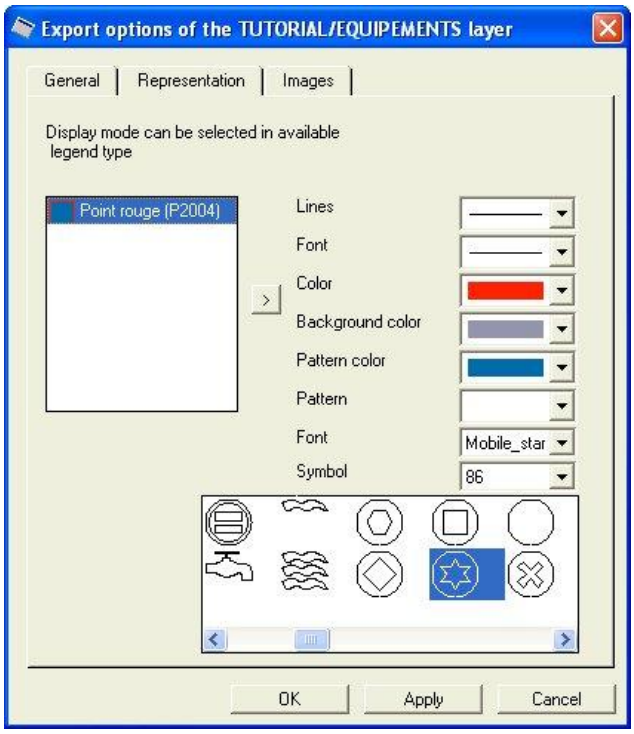
Only the objects linked to the layer
This option should be kept selected in all cases.
This option allows faster export according to the data configuration in the STAR spatial database.

Save transparency
Option used to keep surface transparency.

Choose for the layer the geometries to be exported
Click the graphic objects to export.

Note:
As already saved, it is not necessary to export all construction lines and points (with surfaces).

Step 5 **Definition of representation of map legends**



Automatic correspondence is proposed by default in the **STAR GIS** legend. However, if you want to, you can define another symbol system for each type of STAR legend.

As far as points are concerned, you need to associate TrueTypes fonts instead of STAR symbols. To do so:

1. Choose a Font; that is a Windows font containing vector symbols.

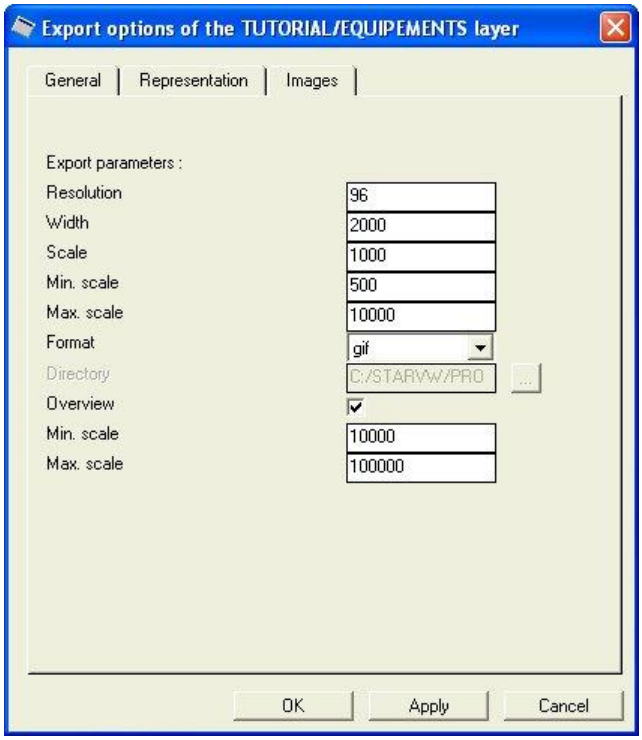
2. Choose one of the represented symbols.

You will find on the CD-ROM a TrueTypes editor you may test for 30 days ***(Font Creator Program 4).***

Technical recommendation:

If your **STAR GIS** version has network access to the data via the STAR spatial server, the client/server legends probably do not suit you.
That is why we recommend you to create in **STAR GIS** a local legend file (*.leg file). This will allow you to adapt the legends in **STAR GIS** for a transfer adapted to **MobileSTAR**.

Step 6 **Definition of parameters to create image layer for background layers**

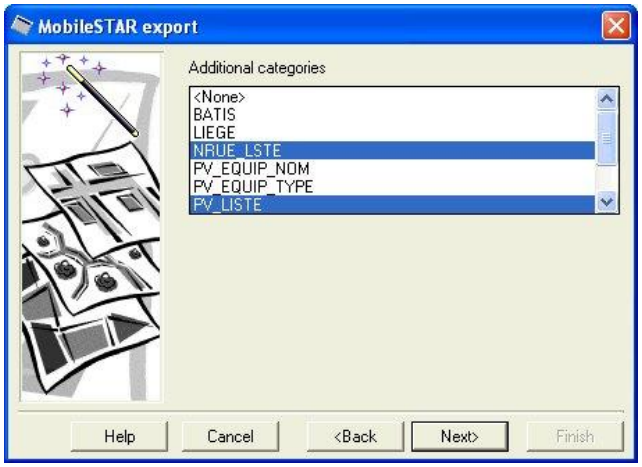


All vector layers defined with the ***Background*** status can be exported in one sole image layer computed by **STAR GIS** as a series of adjacent images.

The parameters to create this seamless image layer are:

Resolution: DPI resolution of generated images.
Width: Width in pixels per image.
Scale: **STAR GIS** scale to create images.
Min. scale: Minimum view image scale.
Max. scale: Maximum view image scale.
Format: Format of generated images.
Directory: Directory in which the image layer is generated.
Overview: An image can be computed as a global view.
Min. scale: Minimum view image scale.
Max. scale: Maximum view image scale.

Step 7 **Export of more alphanumeric tables**



It is possible to export additional alphanumeric tables which are not necessarily linked to map objects.

Warning! All the data of the alphanumeric table will be exported.

This function is essential to export additional tables that contain values used in the encoding lists of **MobileSTAR** forms.

This function is also very useful for using sub-forms from the main menu.

Step 8 **Encoding of user data**

For the traceability of dispatched SXL files, an SXL file will be identified with the following information:

- User's name.
- User's first name.
- User's initials.
- E-mail to send a new SXL after synchronisation.
- Phone.
- Mobile.

This information can be used during synchronisation.

The last message on screen tells you the time needed to export your file in SXL.
Example: According to the PC power, to export 10,000 parcels you will need between 2 and 5 minutes.

We remind you that XML export files are created by default in the following directory:

C:\starvw\PROGRAM\TOOLS***session_name***\xml

- «***C***»: the drive in which **STAR GIS** is setup and the «starvw» directory which can be: C, D,….
- «***session_name***» is the name of your **STAR GIS** session used for your exports.
- **STAR GIS** creates an «**Export**» and «**Import**» directory in this directory.

If you want to install your export and import files to a personal directory, encode a directory name in your **STAR GIS** session in the «Shared data directory» text box.

4. Synchronising data with STAR GIS

4.1 Introduction

After data is collected or updated on the ground, the SXL file sent to the administration only contains the information (features) updated on the ground. Thus, the user only gets the newly created objects or old objects modified graphically or alphanumerically and part of «drawable» layers.

A drawable layer is always made up of complete GIS objects; that is a graphic object with an automatic link to the alphanumeric form. Update is possible only with an identifier, a unique alphanumeric key. This obliges the user to correctly encode on the ground the fields making up the STAR key in the **STAR GIS** and/or **CARTO WinSTAR** forms.

If an object is created in **MobileSTAR**, its status is 1 in the SXL update file («status»=1).

If an object was modified on the ground by **MobileSTAR**, this may consist in:
- a simple update of alphanumeric attributes. As a consequence, the status of the object is 2 in the SXL update file («status»=2).
- the deletion of the object. As a consequence, its status is 3 in the SXL update file («status»=3).
- a new map position. As a consequence, the status of the object is 4 in the SXL update file («status»=4).

Updating the map server is based on this «status» parameter.

4.2 Presentation of the synchronisation wizard

Procedure for export from **STAR GIS** to **MobileSTAR**:

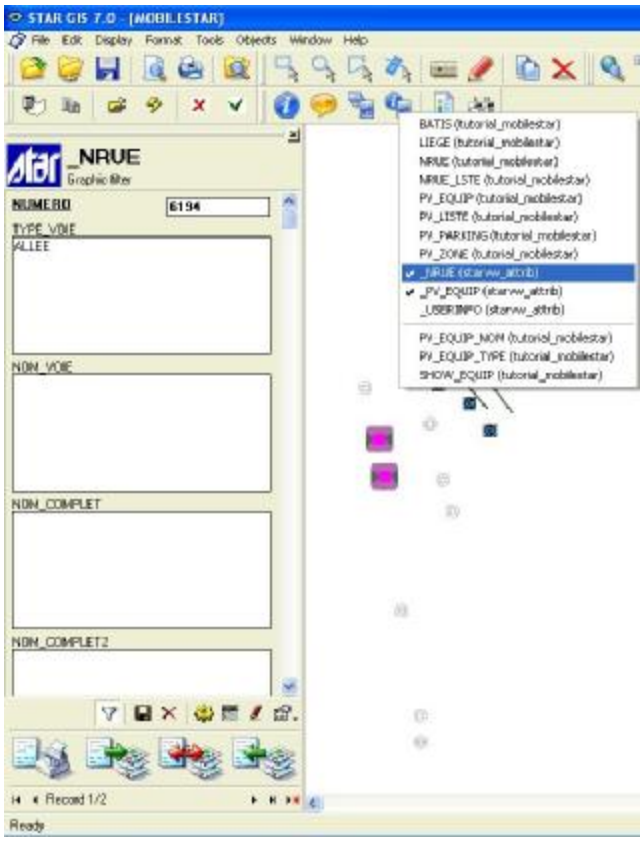
Step 1 **Import of update SXL file from MobileSTAR**

The update file (SXL file) is imported by the third command of the **MobileSTAR** toolbar (‘***Open MobileSTAR file***’).

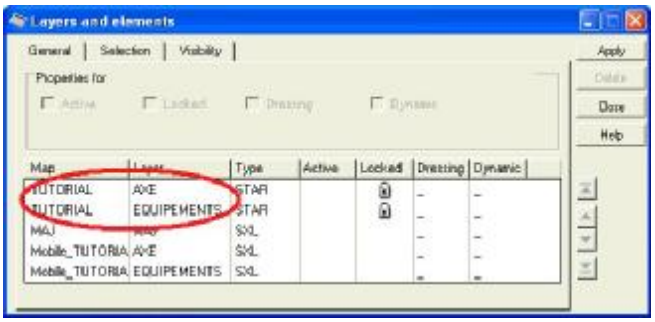
When the file opens, a new window opens with:
- the properties of the file (its place on the disk).
- the personal information of the person in charge of the update.
- the name of the updated layers.

The user must also specify whether to open the file for integration to the database (***Yes***) or for query (***No***) only.

Step 2 **File preview**



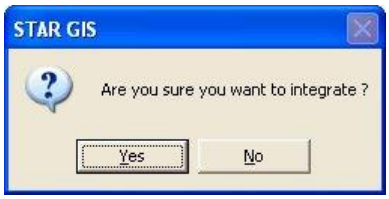
Star GIS automatically finds the initial layers in client server and displays them as shaded background.

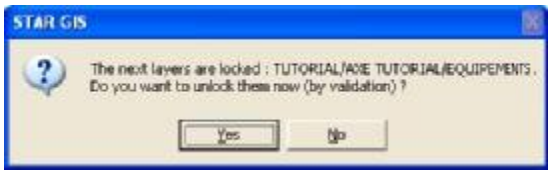


An automatic zoom is applied to the updated or created objects. These are highlighted by enlarged symbols (for modified objects) and set for selection.

The attribute data of objects is stored in the temporary database (STARVW_ATTRIB). This data can be queried before definitely integrating updates. To do so, click on the «***Alphanumeric attributes*** » command and choose the table in the list.

Step 3 **Temporary integration in transactional mode**




STAR GIS
The next layers are locked : TUTORIAL/AXE TUTORIAL/EQUIPEMENTS.
Do you want to unlock them now (by validation) ?
Yes
No

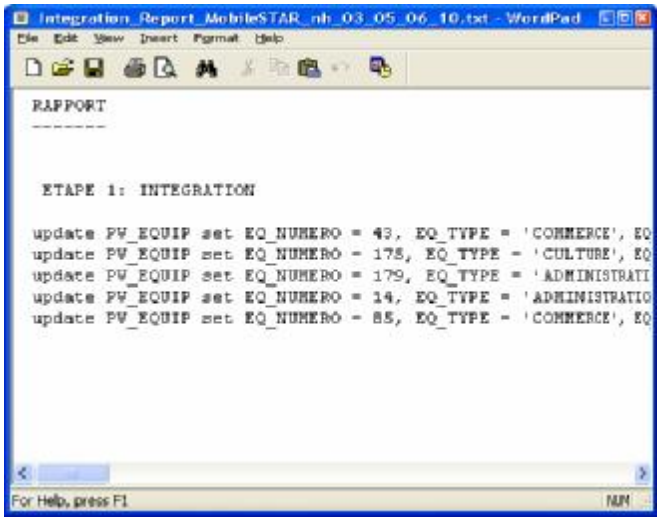
Update in transactional mode via the map server (differential CXserver files) and the ODBC source used in your **STAR GIS** session.

Note that for the alphanumeric part, the transactional mode also works with an MS-ACCESS database.

To integrate updates, the initial layer must be unlocked. During integration, the software proposes to unlock it if it is locked.

Note:
The layer should be unlocked in Ctrl+R before starting integration.

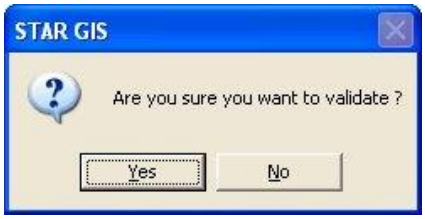
Step 4 **Visualization of temporary integration in transactional mode**

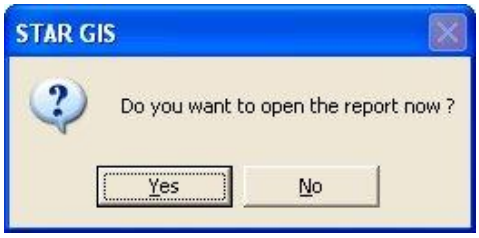

Integration_Report_MobileSTAR_nh_03_05_06_10.txt - WordPad
File Edit View Insert Format Help
RAPPORT
ETAPE 1: INTEGRATION
update PV_EQUIP set EQ_NUMERO = 43, EQ_TYPE = 'COMMERCE', EQ
update PV_EQUIP set EQ_NUMERO = 178, EQ_TYPE = 'CULTURE', EQ
update PV_EQUIP set EQ_NUMERO = 179, EQ_TYPE = 'ADMINISTRATI
update PV_EQUIP set EQ_NUMERO = 14, EQ_TYPE = 'ADMINISTRATIO
update PV_EQUIP set EQ_NUMERO = 85, EQ_TYPE = 'COMMERCE', EQ
For Help, press F1
NUM

A report is proposed after the temporary integration. This technical report gathers all the actions done on objects.

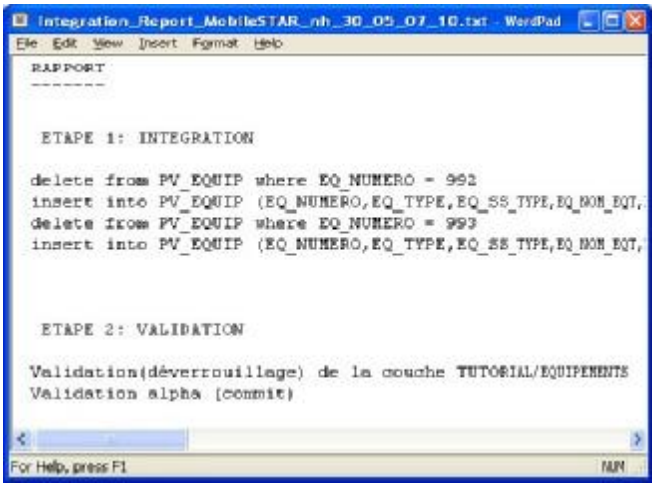
At this stage, manual controls (*integration of updates in the alphanumeric forms linked to graphic objects*) are possible and it is always possible to cancel this integration which, as mentioned by its name, is temporary.

Step 5 **Validation or cancellation of temporary integration**



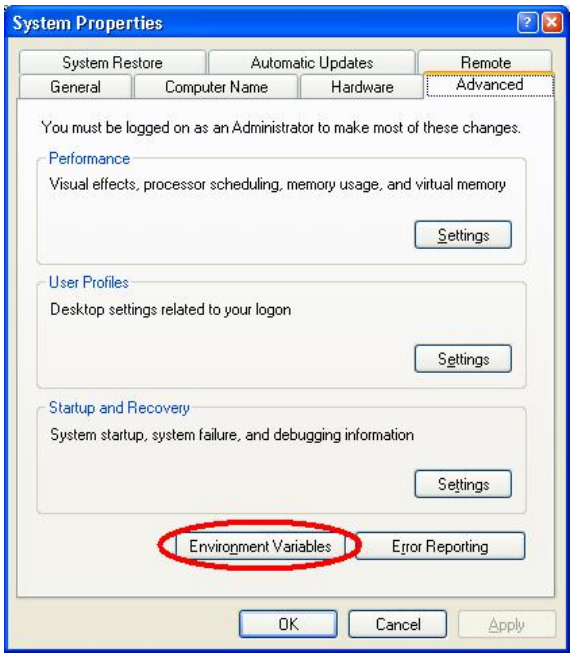


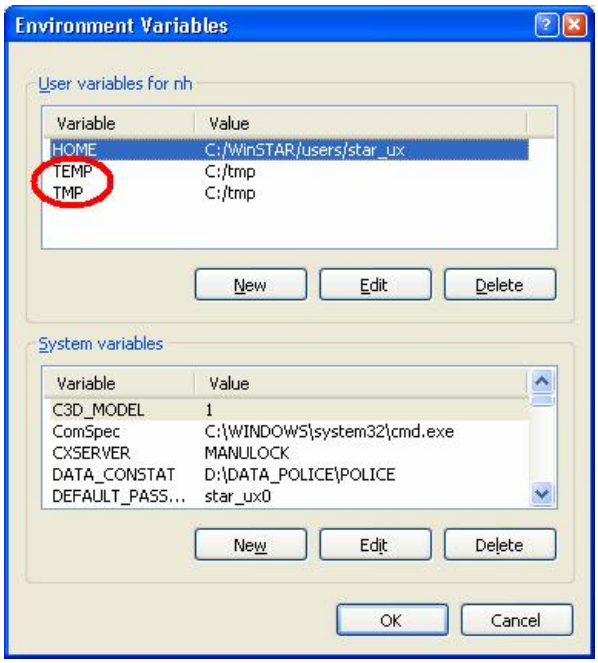
The report is completed with the latest effective update operations. If need be, this report can be saved in a specific directory (File/Save as…).



4.3 Access to LOGFILE

When a terrain file is imported in STAR XML to Star GIS, the software creates a log file in the directory defined in the Windows TEMP variable.





The name of the file can be:

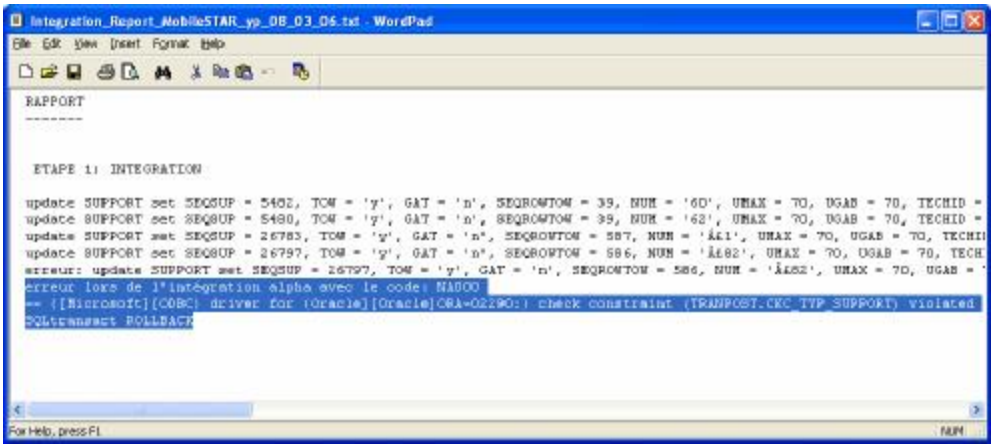
Integration_Report_MobileSTAR_yp_23_03_06_10.txt

It contains the user's name (initials) and the date (day and time) so that a log will be kept each time an SXL terrain file is added to the system.

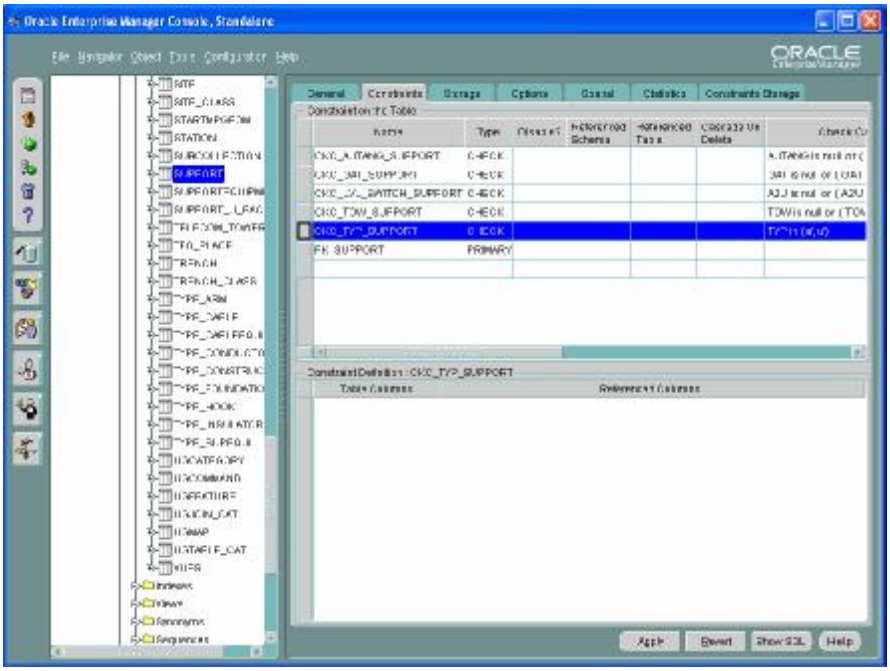
Of course, the administrator is responsible for the copy if he wants to keep a backup of the updates done for each task on the ground.

4.4 SQL errors in integration procedure

When your terrain data is imported to the database, some of it may not be integrated if it does not respect the constraints imposed on the server. For instance, in the image here under, integration is cancelled for the SUPPORT table as the updated data does not comply with one constraint.


Integration_Report_MobileSTAR_yp_08_03_06.txt - WordPad
File Edit View Insert Format Help
RAPPORT
ETAPE 1: INTEGRATION
update SUPPORT set SEQSUP = 5402, TOW = 'y', GAT = 'n', SEQROWTOW = 39, NUM = '6D', UMAX = 70, UGAB = 70, TECHID =
update SUPPORT set SEQSUP = 5480, TOW = 'y', GAT = 'n', SEQROWTOW = 39, NUM = '62', UMAX = 70, UGAB = 70, TECHID =
update SUPPORT set SEQSUP = 26783, TOW = 'y', GAT = 'n', SEQROWTOW = 587, NUM = 'Â£1', UMAX = 70, UGAB = 70, TECHI
update SUPPORT set SEQSUP = 26797, TOW = 'y', GAT = 'n', SEQROWTOW = 586, NUM = 'Â£82', UMAX = 70, UGAB = 70, TECH
erreur: update SUPPORT set SEQSUP = 26797, TOW = 'y', GAT = 'n', SEQROWTOW = 586, NUM = 'Â£82', UMAX = 70, UGAB =
erreur lors de l'intégration alpha avec le code: NADOO
== [[Microsoft][ODBC driver for Oracle][Oracle]ORA-02290: check constraint (TRANPOST.CKC_TYP_SUPPORT) violated
SQLtransact ROLLBACK
For Help, press F1
NUM

With Oracle Manager, it is possible to find the details of the constraint mentioned in the report.



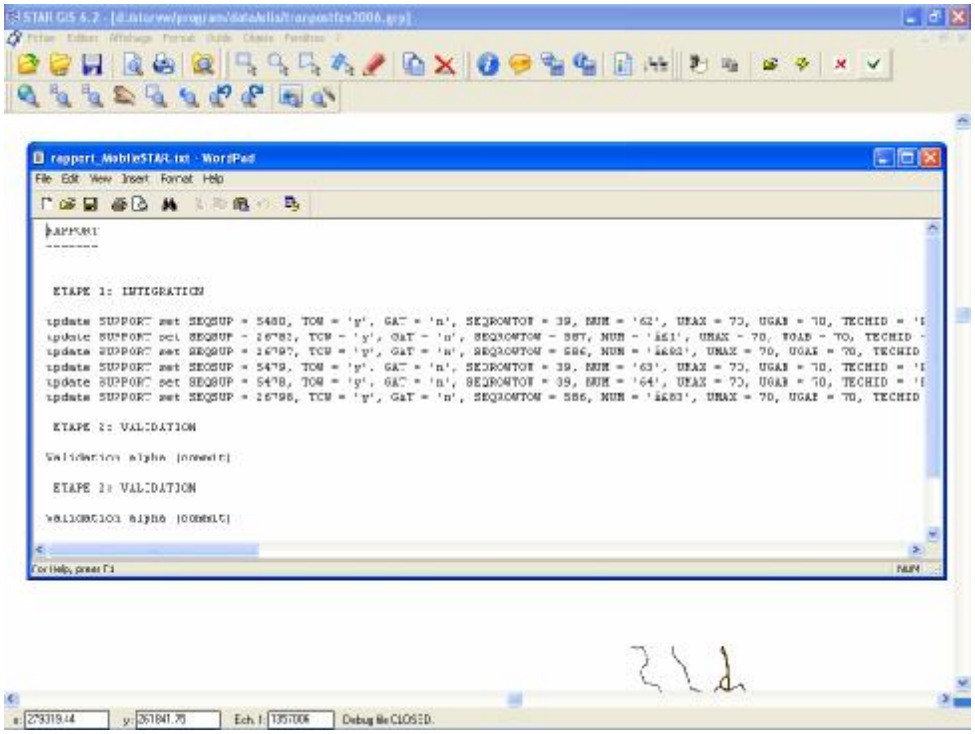
So, if possible, the constraints created in **MobileSTAR** should be identical to the one imposed on the central server. This is usually done by the use of encoding lists.

There are simple lists based on annexed alphanumeric tables present in the **MobileSTAR** project (thus, in Sqlite as well).

There are also interdependent lists. These lists and their contents vary according to the value of a field already defined in the data input form.

Example: In a first simple list I choose a section and in a second interdependent list I choose a sub-section. The content of the second list will depend on the choice made in the first one.

If the problem of constraint is solved, update is possible and « commit » ends update.



5. ANNEXES

5.1 The supported formats

MobileSTAR supports several standard vector formats:

STAR XML	Read and write **STAR XML**.
SHP	Read and write **ESRI**©- Shapefiles with DBF attributes.
DGN	Read and write **Microstation**© – DGN with restrictions.
DXF	Read and write DXF with restrictions.
ORACLE Spatial©	Specific plug-in not included in standard but available. Contact info@star.be
FME©	Specific plug-in not included in standard but analysis under way. Contact info@star.be
STAR Carto	Read and write **STAR**. Specific plug-in not included in standard but analysis under way. Contact info@star.be

MobileSTAR supports several standard raster formats:

All formats here under may have their own world file.

If an image has a world file, usually a TFW file, the image is visualized in the main map window.

If you have several adjacent images, you can compute in the **File** menu a seamless image layer (go to chapter 2.2.1 (Main menu) for the operating mode).

GIF	Compuserve GIF
TIF	Aldus TIFF
JPG	JPEG
CX	STAR (world file included in file)
XWD	XWD
PNG	PNG
BIL	BIL
BMP	BMP
ER MAPPER	ECW Specific plug-in not included in standard but analysis under way. Contact info@star.be

5.2 Detecting breakdowns

GPS connection problem

GARMIN GPS

If you have a GARMIN GPS, you must take into account the type of RS232 cable you use. If you work on a laptop, on an office PC or on a Tablet PC, you may use an RS232 cable. Specific PDAs (iPAQ for instance) sometimes need a twisted cable (RS232).

NAVMAN GPS

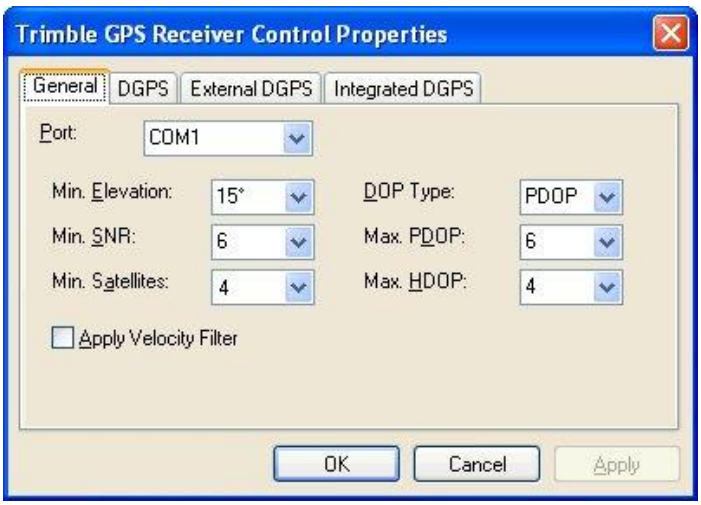
If you use a NAVMAN GPS coupled with an iPAQ PDA, don't forget to install the driver (CAB file) downloadable from NAVMAN's Web site. With this software you may know the number of your COM port and its speed. Simply encode these parameters in **MobileSTAR *Preferences*** file.

Bluetooth GPS

If you work with a Bluetooth GPS, make sure to launch your Bluetooth connection before launching **MobileSTAR**.
A program sometimes supplied with the GPS will tell you the communication speed as well as the COM port to use.
Warning: Don't let the program active before launching **MobileSTAR** ; otherwise, the COM port will not be free.

5.3 Customizing Trimble GPS

The properties of Trimble GPS are accessible via the pull-down menu: **« GPS » -> « Properties »**



Basic configuration of the GPS

In most cases, modifying these parameters does not improve the precision of a position in a given situation, at a given time but allows (or not) to save points with less precision.

Port

This parameter shows the serial port used for connecting the GPS receiver to the field notebook.

With Trimble, you will use by default:

- for GeoExplorer : COM3 (TSIP internal communication) or COM1 if you use an external receiver with the serial adapter;
- for Recon or TSCe : COM1.

Min. Elevation

The elevation of a satellite is the angle built by the horizontal and the straight line going through the phase center of the GPS antenna and the transmitter of the satellite itself. It represents the «height » of the satellite in the sky.

The **minimum elevation** is the value of this angle under which the satellite is no longer used by the processor for computing the position.

MIN. SNR

The **SNR** (Signal Noise Ratio) is a ratio that expresses the quality of the signal reception in the GPS. The greater the ratio, the better the reception.

The minimum is the value under which the satellite to which it corresponds will not be used for computing the position.

Min. Satellites

Minimum number of satellites. A minimum of 4 satellites is necessary for 3D GPS computing.

DOP Type

The DOP (**Dilution Of Precision)** is a parameter used to qualify the GPS precision. The influence of each satellite on the final result is «quantified» by this parameter. Several types of DOP exist:

- HDOP dilution of precision in X and Y dimensions (Horizontality)
- VDOP dilution of precision in Z variable (Verticality)
- TDOP dilution of precision in the synchronisation of all clocks over the time variable
- GDOP dilution of precision according to the geometry of the constellation of satellites (example : an alignment of satellites is never good)
- PDOP general parameter collecting (in an equation) the influence of the 4 others

The **DOP type** chosen will be the one used to discard satellites in the computing of GPS solutions.

Max. PDOP or Max. HDOP

This value sets the maximum beyond which the analyzed satellite is no longer used in the solution.

Example of configuration of GeoExplorer XT for massive map work (high productivity – average precision).

Port : COM3

Min. Elevation : 10°

Min. SNR : 4

Min. Satellites : 4

DOP Type : HDOP

Max. HDOP : 4

This page allows the user to improve the real-time precision of a GPS measurement by using the DGPS correction. This correction may come from several sources: Beacon, geostationary communication satellites, independent radio source…

Source Type

The **source type** defines the peripheral, in or out, used for the reception of the correction. The types are :

- None: no real-time source is used; the receiver works in «self-use». Post-processing is possible if the software allows recording raw data;
- External: an external source is used such as a DAB (Digital Audio Broadcast) radio receiver. The communication parameters between the GPS and radio receivers will be defined in the next tab;
- Beacon: (free) correction by radio-transmission from reference cost earth stations;
- Com Satellite: correction (by subscription) by waves identical to the GPS's and transmitted from geostationary satellites, mainly OmniStar and LandStar ;
- WAAS: (free) correction transmitted from geostationary satellites, WAAS or EGNOS (Europe) depending on the parts of the globe;

Position Mode

The **position mode** specifies the type of solution used for recording positions:

- Corrected Only: corrected positions only are recorded, the software will not allow position recording without THE selected correction;
- Best Available: the software uses the best solution, either the corrected and defined position (see Source Type) or the position defined by the second (or third) type of correction (see later) or the recording of an autonomous position if no correction is available;

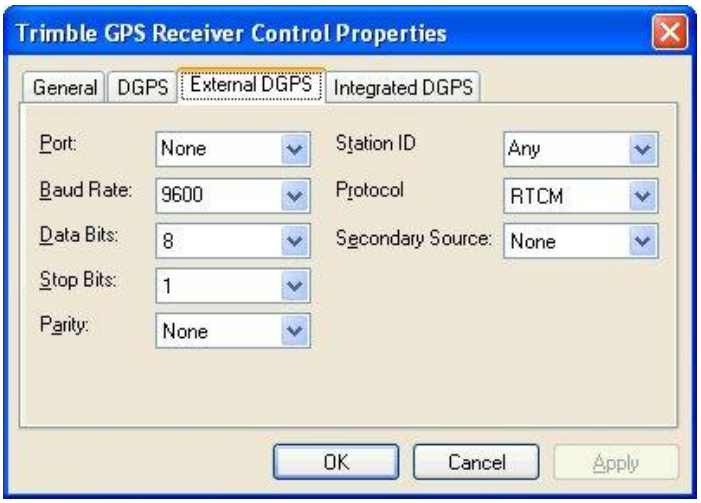
- Autonomous Only: the software does not save the correction; all positions will be recorded with no real-time correction.

Age Limit

The **Age Limit** is the maximum period of time during which the latest correction received is used before the software informs of the absences of reception of correction.

Enable WAAS Infill

This setting allows using, besides the planned correction(s), the reception of the WAAS correction (geostationary satellites, free correction). This correction increases the possible choice for the best solution (Best Available). Not available with the type of WASS correction defined.



Settings of external source of DGPS correction

Port, Baud Rate, Data Bits, Stop Bits, Parity

These usual settings define communication with the external receiver. Values depend on the receiver and its configuration.

All available ports depend on the hardware platform used and/or the GPS receiver (DGPS receiver available only on Pathfinder Pro and Power products).

Station ID

The **identifier of the station** defines the station used by preference. «Any» allows the GPS receiver to choose any station available for a frequency; it will choose the one with the best reception.

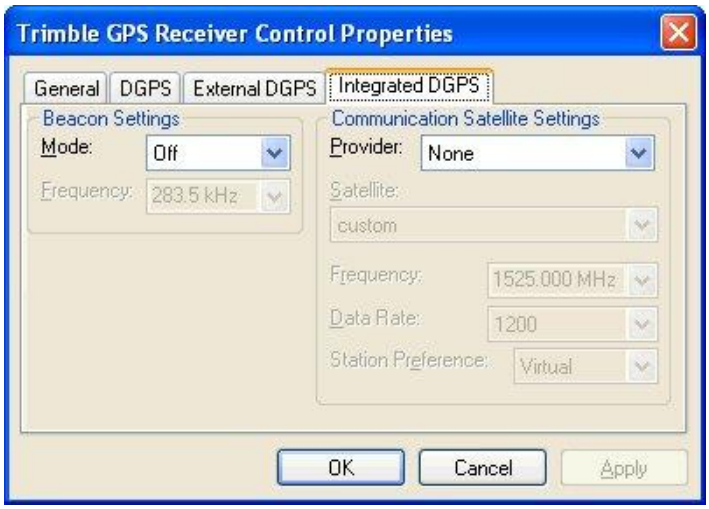
Protocol

This setting defines the **format** of the correction received.

The RTCM is a public format; the CMR is Trimble proprietary format.

Secondary Source

A **secondary** correction **source** can be used by the receiver: either Beacon or Com Satellite. It will be used when the external source is lacking (loss of reception for a period of time longer than the age limit). The secondary source supplants the WAAS correction which can be defined in the tab before. There are therefore three possibilities of corrections before recording data with no correction.



Beacon Settings – Mode

The **Beacon mode** determines the way reception is parameterized:

- Auto-Power : the most powerful station (best reception) is used;
- Auto-Range : the nearest station picked up is used;
- Manual: the user defines the frequency and thus, the station used.

Beacon Settings – Frequency

The **Frequency** of the Beacon reception is customizable when the manual mode is selected (list available at www.trimble.com).

Communication Satellite Settings – Provider

The user chooses the correction **provider** to which he has subscribed: OmniStar or LandStar.

Communication Satellite Settings – Satellite

This field determines the **satellite to use**. This choice depends on the region of the user. A «Custom» possibility allows the user to specify manually the reception frequency.

The selection of a specific satellite automatically defines the **data transfer rate** and the **frequency** used. (These two settings need to be defined if the «Custom» option is used in the satellite field).

Communication Satellite Settings – Station Preference

This field allows choosing manually the type of correction used. Possibilities depend on the provider chosen (read carefully their documentation).

5.4 What's New in MobileSTAR 3.1

• Spatial work (SQLite database).
New export tool in **MobileSTAR** **à *see section 2.4.2***

• New import/export procedure with update save (modify and create).
New StarGIS export tool **à *see section 3***

• Save updates **à *see section 2.2.1***

• Save a dressing composition (legend, visibility scale ranges for layers, forms or screen forms, encoding lists, layer status,…) **à *see section 2.2.1***

• Customize the application's language (definition of the titles to display according to the language of the **MobileSTAR** interface). **à *see section 2.2.1***

• New screen forms (fields of type update, gps x, gps y, gps z, today, now, title…).
à *see section 2.4.3*

• Definition of encoding lists and sub-forms in form (list and subform fields in screen forms).
à *see section 2.4.3*

• Add a label or thematic study to visualise updates.
à *see section 2.3.3*

• Use photos or multimedia documents.
à *see section 2.4.4*